A Joint Publication for U.S. Artillery Professionals

Fires

May - June 2012

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SHAPING FIRES FOR 2020

OFFENSIVE AND DEFENSIVE FIRES IN SUPPORT OF AMERICA'S FORCE OF DECISIVE ACTION

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PURPOSE: Founded in 2007, *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 Army, joint and combined forces, and our nation.

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regiment and battlefield coordination detachment (BCD) headquarters; 13 per FA/Fires battalion/squadron; 3 per fire support element (FSE), Fires and effects cell (FEC), effects coordination cell (ECC) fire support cell (FSC), and separate battery or detachment; 2 per fire support team (FIST); and 1 per Master Gunner. Free copies to Army ADA units: 7 per air and missile defense command (AAMDC) and ADA brigade headquarters; 13 per ADA battalion; and 3 per air defense airspace management cell (ADAM) and separate battery or detachment. The FA and ADA Schools' departments, directorates and divisions each get 2 copies. Other Army branch and US armed services units/organizations and US government agencies that work with FA or ADA personnel, equipment, doctrine, tactics, training organization or leadership issues may request a free copy—including, but not limited to—ROTCs, recruiting commands, libraries, attaches, liaison officers, state adjutants general, public affairs offices, military academies, laboratories, arsenals, major commands, etc. Contact *Fires* at http://sill-www.army.mil/firesbulletin/.

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The Road to 2020

"It is not the critic who counts; not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and again, because there is no effort without error and shortcoming; but who does actually strive to do the deeds; who knows great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who neither know victory nor defeat."
-Theodore Roosevelt

By MG David D. Halverson
Commanding General of the Fires Center of Excellence and Fort Sill, Okla.

In just a few short weeks (May 14-18) Soldiers and leaders from across the Fires Center of Excellence will host the 2012 Fires Seminar at Cameron University in Lawton, Okla., and Fort Sill.

This year's theme is Shaping Fires for 2020: Fires in Support of America's Force of Decisive Action. We are very excited and honored so many of our U.S. Army and Marine Corps senior leaders have volunteered to invest their time in the future of the Fires force.

This year's discussions are all about shaping Fires for the joint force of 2020, and we are thrilled to have the opportunity to host the Commanding General of Training and Doctrine Command, GEN Robert W. Cone, who will share with us his vision for how Fires fits into the joint force of the future.

Attending this year's seminar will be the Commandant of the Marine Corps, General James. F. Amos, who will be discussing Fires in the U. S. Marine Corps, and the Commander of United States Central Command, GEN James N. Mattis, who will be speaking on Fires in the current operating environment. Also, GEN (Ret.) John Abizaid, former commander, U.S. Central Command, has graciously agreed to be the keynote speaker at the seminar dinner on May 15, one of several main highlights for the week.

This year's Fires seminar promises to be an exciting venue to share ideas and shape our future. We have slated a wide range of experienced speakers and panel members to facilitate a dynamic knowledge exchange from Fires leaders around the globe. I encourage each of you to make attending, either in person or via Defense Connect Online (DCO), a high priority on your calendar. The link for seminar registration and other information is now active on the FKN homepage at https://www.us.army.mil/suite/page/Fires. The FCoE Knowledge Management Support Services (KMSS) team has prepared detailed instructions to assist you with registering on DCO prior to the seminar and make the connection as seamless as possible. The link is: https://www.us.army.mil/suite/doc/34514405.

This seminar could not come at a better time. Our Army and the joint force are entering a period of transition. Moving ahead, our priorities are clear. First, the Fires community is committed to the current fight in Afghanistan, while remaining prepared for all contingencies. We must simultaneously develop the Fires force of 2020, while remaining an integral and critical part of the future Army and joint force. We will sustain our all-volunteer force, keeping faith with our warfighters, civilians, wounded warriors and families. The FCoE is

also committed to fostering an environment of life-long learning, developing adaptive and versatile leaders who are dedicated to the Army profession.

Many of our Fires leaders have done some 'heavy lifting' to shape the way ahead. The 'behind-the-scenes' brainwork to delve through years of lessons learned, force structure and program object memorandum (POM) documents, as well as researching new learning concepts, has laid the foundation for in-depth discussion and mitigation on today's challenges for the Fires force of 2020.

Included in this issue are three information papers compiled by members of the Directorate of Training and Doctrine (DOTD) and Capabilities Development and Integration Directorate (CDID) here at Fort Sill. These papers are written with the specific intent to evoke an environment of open dialog regarding current and future challenges of the Fires force and the impact they have on the Army and joint force. Identifying our challenges in training, organization and structure, and systems and equipment was relatively easy. Addressing these issues head-on and providing viable solutions are obviously more difficult. All of them require prioritization as we address the realities of a reduced budget. However, as we prepare the future Fires force, we must be prepared to make the tough choices and ensure our leaders are armed with the proper information to make educated decisions.

We are prepared to move forward. The vast array of threats to our national security and pending challenges are solid proof the Fires communities, in support of offensive, defensive and stability tasks, have a significant role to play in the Army and the joint force of 2020. Operations in both Afghanistan and Iraq have underscored the areas in which we need to improve. Considering lessons learned, feedback from a variety of expert sources and assessments from multiple venues, the information paper by MAJ D.J. Hurt identifies shortcomings in indirect Fires, air and missile defense, electronic attack, and joint Fires integration. "Fires in Decisive Action: Developing Capabilities Required to Win the Next Fight," addresses critical gaps within the Fires supporting offensive, defensive and stability tasks , identifies necessary investments, and assesses the risks involved in each required capability. The overall conclusion is that U.S. Army artillery is the ONLY all-weather, 24/7 Fires capability in the arsenal. We are more economical than joint Fires, and we provide comparable precision and better responsiveness than any other joint Fires system. The capabilities required, to close the identified gaps by 2020, are also addressed in the paper and are open for discussion at the seminar.

By understanding our strengths and weaknesses, we have taken the first steps toward shaping our future. To continue the momentum, we need to address the human factor of the Fires force: our Soldiers and leaders. As the 'school house' for both the Field Artillery and Air Defense Artillery, educating and training the force are among my highest priorities. Of particular interest to most of you will be the information paper, "Fires Leader Development." LTC Kyle Foley and LTC Charles "Hawk" Mills have prepared an exceptional paper based on Dr. Peter Senge's book, "The Fifth Discipline Fieldbook," which emphasizes the building of learning organizations.

Foley examines the framework to develop Fires leaders, who have the knowledge and confidence to integrate Fires in support of offensive, defensive and stability tasks, as they apply to all aspects of the joint intelligence information management (JIIM) Fires, from the tactical to the strategic level. He also addresses the need to maintain life-long learning strategies, as well as developing an environment in which learning opportunities expand across both the FA and ADA branches, creating diverse and multifunctional leaders within the Fires force. Examining the historic logic of separating the branches allows us to better understand the common thread that bonds us into a single, and much more powerful, Fires force.

While neither I, nor the paper, promote the merging of branches, it does address cross-training Field Artillery and Air Defense Artillery officers to "highlight the importance of placing our intellectual energy and collective wisdom toward defining" future Fires leaders. Increased common base of knowledge and additional available assignment opportunities are a significant by-product of cross-training.

In the last edition of *Fires*, I encouraged you to read GEN Raymond T. Odierno's blog article entitled, "Prevent, Shape, Win." MAJ L. Lance Boothe's information paper, "Prevent, Shape, Win: Employing Fires in Support of Offensive, Defensive and Stability Tasks to Meet the Army's Strategic Imperatives for Joint Force 2020," discusses how the Fires force supports the Army imperatives. Not only does the paper address training and the loss of proficiency in integrating and synchronizing Army and joint Fires at the speed and scale required, it specifically discusses the fiscal constraints of reorganization under modularity, issues we have dealt with for almost 10 years.

While we are transforming the organizational structure, discussion and support at all levels of command, are required to follow through. The recurring theme of training, reorganization and modernizing equipment is constant among the three papers.

We are excited about this year's seminar because we have a unique opportunity to forge the Fires force of the future. In his 1910 speech, "Citizenship in a Republic," Theodore Roosevelt said, "It is not the critic who counts; not the man who points out how the strong

man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and again, because there is no effort without error and shortcoming; but who does actually strive to do the deeds; who knows great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who neither know victory nor defeat."

I challenge you to 'get in the arena' at the seminar… make a difference and influence the outcome of this 'battle.'

By the time this magazine reaches most of you, MG James M. McDonald will have assumed command of the Fires Center of Excellence and Fort Sill. The Army could not have made a better selection for this critical position. His experience, professionalism and dedication to the U.S. Army profession have prepared him to lead the Fires community as we enter a period of relative uncertainty and continued transformation.

Having served at Fort Sill as the installation chief of staff, the deputy commanding general and the assistant commandant of the Field Artillery School, McDonald has the advantage of an insider's perspective on the issues facing the Fires force.

With extensive combat experience, he knows first-hand the challenges in theater, for both the Fires force and maneuver commanders, and is fully prepared to assume this command without missing a beat. He also has an added benefit, assuming command of one of the finest organizations in the Army, full of professionals who understand the critical nature of U.S. Army Fires.

Through the last 10 years of conflict, the Fires force has never wavered in its dedication to the mission nor to the country. I am humbled by the sacrifices and contributions of our Fires leaders and am grateful to the families who provided steadfast support to their warfighters. As you know, not since the American Revolution has our country asked so much of an all-volunteer force. The professionalism of our force is fitting from nearly 237 years of traditions that have come before us.

As Karen and I transition to the Training and Doctrine Command Headquarters, at Fort Eustis, Va., we are honored to have the privilege of continued service with you. As we move forward, we carry the knowledge that trust is the bedrock of our profession. As professionals in the only continuously serving branch in the U.S. Army, you have my absolute trust.

Fit to Fight! Fires Strong!

Fort Sill Remembers LTG Gordon Sumner Jr.

The Fires Center of Excellence and Fort Sill, announces and mourns the death of LTG Gordon Sumner, Jr.

Born and raised in Albuquerque, N.M., Sumner's stellar career started with his enrollment at the New Mexico Military Institute in Roswell, N.M. He said, "I went to the institution because I wanted to be a Soldier," and he enlisted at the age of 17, completing basic training at Fort Knox, Ky. He applied for and was accepted for Officer Candidate School, where he graduated first in his class in June 1944. Sumner was the only officer selected for assignment as an artillery instructor at Louisiana State University without a college degree.

Sumner served as an aide to MG Orlando Ward in Korea from 1946-1948, and returned to Korea with the 1st Cavalry Division in 1950, where he was wounded and captured by Chinese forces northwest of Pyongyang, Korea. Escaping after two days, he was medically evacuated to Japan, and his next assignment was serving as the speechwriter for GEN Douglas MacArthur.

In the 1950s, Sumner was closely involved in nuclear development and the 'Honest John' missile. Because of the highly classified nature of those assignments, he was selected for assignments with many of the military's most senior leaders. Sumner served as an advisor to the Joint Chiefs of Staff during the tense days of the Cuban Missile Crisis in 1962.

Sumner served 14 months in Vietnam as a lieutenant colonel, commanding the 25th Artillery Division, and suffered heavy losses during a battle in the 'Iron Triangle,' an area of the Binh Duong Province. Sumner briefed his superiors on the "foolishness" of an attack in that area, which proved to be accurate.

Sumner also served as head of the Middle East Task Group in the 1970s, where he was involved in historic events and with infamous people, including Charlie Wilson, whose famous covert operation resulted in a book and a movie called "Charlie Wilson's War." Sumner called the book "quite accurate," in its portrayal of both Charlie Wilson and the events as they unfolded.

As a lieutenant general, Sumner was on the team for the Panama Canal Treaty during the Carter administration, which directly impacted his decision to retire from military service. His public service continued when he accepted an appointment by President Ronald Reagan as ambassador at large to Latin America, a position he held for over a decade.

Sumner was an active member of the Senior Field Artillery Advisory Council for the past several decades, attending many of the meetings and seminars, which impacted the future of the Field Artillery and the Fires force. He also served as a civilian consultant to the Future Operations Group of Sandia National Laboratory.

Sumner's awards and decorations include: Distinguished Service Medal, Silver Star, Legion of Merit (with three Oak Leaf Clusters), Distinguished Flying Cross, Air Medal (with thirteen Oak Leaf Clusters), Bronze Star Medal "V" Device, Army Commendation Medal (with Oak Leaf Cluster), Purple Heart, Prisoner of War Medal, Senior Parachutist Badge, and various foreign decorations.

An Assessment of Opportunities for the US Army Air Defense Artillery

By COL Daniel Karbler

The release of the new strategic guidance for the Department of Defense requires an analysis of its effects on the Air Defense Artillery (ADA) branch. It gives us a good opportunity to 'see ourselves' in light of the new strategy and assess where we are from a mission and programmatic standpoint. In turn, we need to use this assessment to drive the ADA branch strategy, inform the decision making of senior leadership, and educate the ADA force as to the "So What?" -- explaining their role in strategy implementation.

I wanted to share my thoughts on the opportunities the new strategy provides our ADA branch. In many forms, the strategy identifies roles and missions the Air Defense branch is already performing. The familiar phrase, 'words have meaning,' is even more predominant when one considers the specified tasks laid out in the new strategy, and how they impact the ADA branch.

The opening messages from the president

The president's and secretary of defense's messages touch on key themes that apply directly to our air and missile defense mission, particularly with respect to forward-stationing/deployments to the Asia-Pacific and Middle East regions and future programs.

The president states, "...we are supporting political and economic reform and deepening partnerships to ensure regional security...we are joining with allies and partners around the world to build their capacity to promote security…"

As an air defense force, these words resonate with what our formations do on a routine basis. Today we see units engaged daily with host nations in Korea, Japan, Israel, Germany, Poland, Turkey, Kuwait, Bahrain, and the United Arab Emirates in a direct effort to carry-out the president's expectations. We partner with each of these nations, bilaterally and multi-laterally, to build partnership capacity, conduct integrated joint and coalition exercises, and foster strong ties to their senior civilian and military leadership.

The president's message continues, "In particular, we will continue to invest in the capabilities critical to future success, including…countering weapons of mass destruction; operating in anti-access environments…"

Programmatic decisions affecting the air and missile defense capabilities must fall in line with this investment strategy in order to ensure "future success" against future threats, to include ballistic missile delivered weapons of mass destruction (WMD). This includes investments in global missile defense (GMD) capabilities, terminal high altitude air defense (THAAD) and Patriot.

We must also ensure the Air and Missile Defense

branch enables maneuver operations in anti-access/area denial (A2/AD) environments through lethal, agile, and mobile air defense capabilities, such as our indirect fire protection capability (IFPC). The linchpin to integrate these capabilities is the Integrated Air and Missile Defense (IAMD) Battlefield Control System (IBCS), which uses an open architecture, any sensor/any shooter methodology to integrate Army, joint and coalition air and missile defense capabilities against the current and future array of aerial threats.

The secretary of defense's message emphasizes the role of global presence -- across the Asia-Pacific, Middle East, and European regions -- along with a smaller, leaner force that is technologically advanced.

He states, "It (the joint force) will have global presence emphasizing the Asia-Pacific and the Middle East while still ensuring our ability to maintain our defense commitments to Europe, and strengthening alliances and partnerships across all regions."

Again, we look at the role of our forward-stationed and deployed air defense forces in Korea/Japan, throughout the Gulf, and in Europe, and see that they are executing precisely as the strategy calls for.

Whether it is a single Patriot battery in Poland, remote air and missile defense sites in Japan, Turkey, and Israel, or our battalions in Korea, Japan, and the Middle East, we see that our already "smaller, leaner force" truly has "global presence."

The secretary adds, "It will preserve our ability to conduct the missions we judge most important to protecting core national interests…deterring and defeating aggression by adversaries, including those seeking to deny our power projection, countering weapons of mass destruction…and protecting the homeland."

The Soldiers of the 263rd AAMDC stand watch over the national capital region (NCR), 24/7, providing homeland air defense protection of our nation's capital. They also fulfill the responsibilities associated with protection during national special security events (NSSE's) through the employment of the Deployable Integrated Air and Missile Defense System (D-IAMDS).

And note -- each time a Patriot battalion completes its rotation in the Middle East and no Iranian ballistic missiles have been launched at our Gulf partners that battalion has executed a successful deterrence mission. The same can be said for our forces in Korea and Japan.

As many of our forward-stationed and deployed Patriot batteries provide critical asset defense of aerial ports of debarkation (APOD) and sea ports of debarkation (SPOD) -- both key to power projection -- we see the importance of air and missile defense in fulfilling the secretary's requirement.

Strategic guidance document: Asia-Pacific

The new strategy places emphasis on the Asian-Pacific region. "Accordingly, while the U.S. military will continue to contribute to security globally, we will of necessity rebalance toward the Asia-Pacific region."

The strategy adds, "The United States will continue to make the necessary investments to ensure that we maintain regional access and the ability to operate freely in keeping with our treaty obligations and with international law" while detailing the importance of the mission in Korea by stating, "…we will maintain peace on the Korean peninsula by effectively working with allies and other regional states to deter and defend against provocation from North Korea."

Air and missile defense plays a critical role from the tactical/theater to the strategic/global areas of responsibility and remain highly leveraged in the Asia-Pacific region. The headquarters of both the 94th Army Air and Missile Defense Command (AAMDC) and the 35th Air Defense Artillery Brigade routinely engage with our allies in Korea and Japan.

The 94th AAMDC is partnered with the 13th Air Force through its operational control relationship. This ensures the Combined Force Air Component Commander (CFACC) has the full range of air and missile defense capabilities available to employ interdependently with other joint assets. Patriot units in Korea and Japan work continuously with their joint and allied partners to

PFC Trevor Gaston, from 2nd Battalion, 263rd Air Defense Artillery, demonstrates an FIM-92 Stinger Man-Portable Air-Defense System at Bolling Air Force Base, Washington D.C. Air Defense units from South Carolina and Ohio have been on rotating deployments to the national capitol region to support homeland defense as part of Operation Noble Eagle. This continued operation began in 2001, just days after and in response to the 9/11 terrorist attacks. (Photo by SPC Darron Salzer, U.S. Army)

provide regional deterrence, while the TPY-2 Radar in Shariki, Japan provides capability to both the regional and global missile defense missions.

The strategy mandates, "…that we maintain regional access and the ability to operate freely…"

The Joint Operational Access Concept (JOAC) discusses opposed operational access and states, "The essential problem for future joint forces is to be able to project military force into an operational area and sustain it in the face of armed opposition…". As anti-access/area denial (A2AD) presents this military problem in the face of the strategy mandate of maintaining access and freedom to operate, we see a key role air and missile defense will play.

For instance, area denial efforts by an adversary will require a rapidly deployable, agile, and lethal system that provides C-RAM and UAS defense for our expeditionary forces operating in an austere environment. In order to best understand, define, and articulate the air and missile defense role, we have commissioned a study that will look at our concepts of employment consistent with the emerging concepts of joint operational access, A2AD, and airsea battle.

While much of the joint operational access and A2AD discussion centers on the Asia-Pacific region, we will look across all regions. This study will help us identify planning assumptions and what needs to be done to challenges. Its outcomes will be briefed this spring and will be a major part of our discussions during this year's Fires seminar.

Middle East

Though the military is drawing down in the Middle East, the strategy still places great significance on the region's security:

"Our defense efforts in the Middle East will be aimed at countering violent extremists and destabilizing threats, as well as upholding our commitment to allies and partner states. Of particular concern is the United States will do this while standing up for Israel's security and a comprehensive Middle East peace, including the proliferation of ballistic missiles and weapons of mass destruction (WMD). U.S. policy will emphasize Gulf security, in collaboration with Gulf Cooperation Council countries when appropriate, to prevent Iran's development of a nuclear weapon capability and counter its destabilizing policies. In support these objectives, the United States will continue to place a premium on U.S. and allied military presence in – and support of – partner nations in and around this region."

Deployment of U.S. Army Air Defense Artillery battalions and a brigade headquarters throughout the Gulf region shows the United States' enduring military commitment to the security of the Gulf and Middle Eastern countries. The air defense units are well integrated with both the joint and allied architectures. Bilateral and multilateral partnerships, formalized though our work at the CENTCOM Integrated Air and Missile Defense (IAMD) Center in Abu Dhabi, United Arab Emirates, allow U.S. and Gulf Region partners to exercise frequently through regional exercises such as Falcon Shield, Unified Protector, Eagle Resolve, and GCC Air and Missile Defense Exercises (GCC AMDEX's).

Through the IAMD Center, Air Defense Liaison Teams (ADLTs) are incorporated into the Air Operations Centers (AOCs) of our Gulf partners, providing air picture and situational awareness, as well as training and exercising ADA tactics, techniques, and procedures (TTPs). The deployed brigade and battalions contribute significantly to these exercises, working closely with their allied partners and forming relationships very similar to those the air defense community experienced with the Germans and Dutch during the Cold War years in Central Europe. In short, the Army's *Air and Missile Defenders* are 'on-point' in this region and continue to fulfill the Middle East requirements as stated in the defense strategy.

The joint relationships within CENTCOM between the deployed AMD forces, Air Force Central Command (AFCENT), and Navy Central Command (NAVCENT) have never been stronger. Planning and coordination for exercises and real-world operations encompass the full range of staff actions.

Defense design, ROE, identification and engagement criteria, unit positioning, radar resourcing and cueing, pre-planned responses, and AMDEX's, are only a few examples where the AAMDC, AMD brigade, AFCENT and NAVCENT commands and staffs synchronize operations.

Europe

The strategy discusses the rebalancing of forces within Europe: "Combined with the drawdown in Iraq and Afghanistan, this has created a strategic opportunity to rebalance the U.S. military. Investment in Europe, moving from a focus on current conflicts toward a focus on future capabilities. In keeping with this evolving strategic landscape, our posture in Europe must also evolve."

I remain optimistic that the air defense forces in Europe will not be 'rebalanced.' With the inclusion of strategic radar sites in Israel and Turkey, continuing

Echo Battery, 5th Battalion, 52nd Air Defense Artillery conducts Avenger Table VIII and X certifications during a unit field training exercise in April 2011. (Photo courtesy of 11th Air Defense Artillery Brigade.)

Patriot-to-Poland battery rotations, and execution of European Phased Adaptive Approach (EPAA) through THAAD battery deployments, we see how air and missile defense forces are already moving toward the "focus on future capabilities."

Partnerships

Though we have discussed the specific partnerships developed throughout the Asian-Pacific, Middle Eastern, and European regions, it is important to read the strategy's summation on building partnership capacity:

Building partnership capacity elsewhere in the world also remains important for sharing the costs and responsibilities of global leadership. Across the globe we will seek to be the security partner of choice, pursuing new partnerships with a growing number of nations… whose interests and viewpoints are merging into a common vision of freedom, stability, and prosperity. Whenever possible, we will develop innovative, low-cost, and small-footprint approaches to achieve our security objectives, relying on exercises, rotational presence, and advisory capabilities.

Again, we see air and missile defense forces directly involved in building partnership capacity, conducting their missions precisely in line with the specific language from the strategy. Nowhere is this more prevalent than the work we are doing with partners in Europe and the Middle East. Though the MEADS program has been terminated, we still have an extremely strong partnership with the German air defense forces. This is evidenced by the recent decision by the German Defense Ministry to relocate the German Air Defense School from Fort Bliss, Texas, to Fort Sill, Okla., continuing our long-standing relationship and allowing us to cooperate on all aspects of air and missile defense, from combat developments to instructors in the ADA school.

More recent examples where we have begun to build partnership capacity are with the United Arab Emirates (UAE) and Kuwait, both of whom have purchased billions of dollars in Patriot and terminal high altitude air defense (THAAD) systems. The UAE Air Defense students receive their institutional training at Fort Sill. Recently, six 94S (radar maintainers) graduated from their radar training course.

In late March, we will see the consolidated graduation of 14E, 140E, and 14T students who will comprise the first-ever UAE Patriot PAC-3 battery.

Additionally, UAE hosts the aforementioned Center for Integrated Air and Missile Defense (CIAMD). CIAMD, manned and supported by CENTCOM, ARCENT, and AFCENT, provides all GCC countries with the opportunity for air and missile defense professionals to

meet, discuss, and exercise important regional air and missile defense principles, concepts, and procedures using academics, planning and simulation.

In Kuwait, deployed U.S. Patriot forces routinely conduct fully integrated training with Kuwaiti Patriot units. Command and control, communications, and air battle functions are shared at the battalion level during on-going air defense operations. This included augmenting the Kuwaiti air defenses during the first-ever Patriot missile live-fire held at the Udari Range in Kuwait.

Primary missions of the U.S. armed forces.

The strategy provides a section titled, "deter and defeat aggression." It states: "U.S. forces will be capable of deterring and defeating aggression by any potential adversary. Credible deterrence results from both the capabilities to deny an aggressor the prospect of achieving his objectives and from the complementary capability to impose unacceptable costs on the aggressor. U.S. forces will plan to operate whenever possible with allied and coalition forces."

Our air and missile defense forces, as an element in the Fires warfighting function, lead regional and global deterrence missions against potential missile attacks from Iran and North Korea.

It is important to note that the mission statements of these units are twofold: "…to deter air and missile attack, and if deterrence fails, defeat…".

We combine our defensive Fires "capabilities to deny an aggressor the prospect of achieving his objectives" with our offensive Fires brethren's "complementary capability to impose unacceptable costs on the aggressor" in a direct application of the Fires warfighting function toward meeting this strategy.

As mentioned previously, successful deterrence occurs each day our GMD, NCR, and Patriot forces maintain 24/7 watch in the homeland, CENTCOM, PACOM, and EUCOM.

Project power despite anti-access/area denial challenges.

This section of the strategy details the importance of the air and missile defense force. It specifically lists ballistic and cruise missile use by our adversaries and follows with the requirement to invest in improving our missile defenses. The strategy reads:

"In order to credibly deter potential adversaries and to prevent them from achieving their objectives, the United States must maintain its ability to project power in areas in which our access and freedom to operate are challenged. In these areas, sophisticated adversaries will use asymmetric capabilities, to include electronic and cyber warfare, ballistic and cruise missiles, advanced air defenses, mining, and other methods, to complicate our operational calculus. States such as China and Iran will continue to pursue asymmetric means to counter our power projection capabilities, while the proliferation of sophisticated weapons and technology will extend to non-state actors as well.

Accordingly, the U.S. military will invest as required to ensure its ability to operate effectively in anti-access and area denial (A2/AD) environments. This will include implementing the Joint Operational Access Concept, sustaining our undersea capabilities, developing a new stealth bomber, improving missile defenses, and continuing efforts to enhance the resiliency and effectiveness of critical space-based capabilities."

As this section is titled "Primary Missions of the U.S. Armed Forces," it is important to note the strategy calls for investment in missile defenses as part of the "Project Power Despite Anti-Access/Area Denial Challenges" sub-section. Since this is a primary mission listed within the strategy, it follows that air and missile defense be understood as an Army core capability.

While we leverage all available joint interdependencies in order to conduct missile defense, in many strategic and operational instances, the Army's air and missile defense force may be the only capability available to combatant commanders.

Defend the homeland, provide support to civil authorities.

The defense strategy states, "U.S. forces will continue to defend U.S. territory from direct attack by state and non-state actors." It adds, "Homeland defense and support to civil authorities require strong, steady–state force readiness, to include a robust missile defense capability."

Whether it is manning the system interceptor silos with the 49th Missile Defense Battalion at Fort Greely, Alaska, or maintaining vigilant surveillance over the national capital region, the air and missile defense Soldiers of the 100th Missile Defense Brigade and 263rd AAMDC stand watch 24/7. Their critical missions are linked directly to the strategy's directive for defense of the homeland. We must not lose sight of the other mission of the 263rd AAMDC, which is to provide air defense during national special security events (NSSEs). Though low-profile, the NSSE air defense missions provide strategic-level protection of specific activities within the homeland, and are executed within the Deployable – Integrated Air and Missile Defense (D-IAMDS) concept.

Provide a stabilizing presence.

This section of the strategy relates to the discussion on building partnership capacity with our allied and coalition partners. It says: "U.S. forces will conduct a sustainable pace of presence operations abroad, including rotational deployments and bilateral and multilateral training exercises. These activities reinforce deterrence, help to build the capacity and competence of U.S., allied, and partner forces for internal and external defense, strengthen alliance cohesion, and increase U.S. influence. A reduction in resources will require innovative and creative solutions to maintain our support for allied and partner interoperability and building partner capacity. However, with reduced resources, thoughtful choices will need to be made regarding the location and frequency of these operations."

Noted previously, our air and missile defense units carry-out the strategy's intent, sometimes with as little as an 80-Soldier battery throughout an entire country such as is done with our Patriot-to-Poland rotations, or two batteries stationed per GCC country. The unit commanders and Soldiers work closely with the host nation air defense forces in training exercises, professional development, and cultural exchanges, to name a few. It is done with a relatively small footprint, and when compared to the outcomes which the strategy seeks -- deterrence, help build the capacity and competence of U.S., allied, and partner forces for internal and external defense, strengthen alliance cohesion, and increase U.S. influence -- we see a tremendous benefit gained.

The intent of this article is to give a perspective on how 'we see ourselves' with respect to fulfilling the new defense strategy. The air and missile defense forces are already meeting the tenets of the defense strategy on many levels -- strategic-operational-tactical; at each echelon -- global-regional-homeland-theater; with multi-COMPO forces both home and abroad -- national capital region and GMD; and in all regions of interest -- Asia-Pacific, Middle East, and Europe.

Though there are many great things being done now within our air and missile defense forces in consonance within the context of the new defense strategy, we cannot lose sight of what the defense strategy means for our future.

The requirements for increased investment in air and missile defense capability will only increase. Future UAS and cruise missile threats will challenge us to protect our maneuver formations. We must recognize the global deployments in support of the TPY-2 radar missions that 47 percent of our Patriot force is either forward-stationed or deployed, the 24/7 mission of our National Guard forces in support of NSSE's and the NCR, and upcoming deployments of THAAD in support of all COCOMs will continue to challenge our formations.

We must ensure that across the DOTMLPF we are resourced to meet these challenges, that our training base is adequately prepared to educate our Soldiers on these diverse and dynamic missions, and that we continue our coordination across all stakeholders -- JFCC-IMD, SMDC, FCoE, AAMDCs, among joint and coalition partners, and within the Air Defense branch.

Soldiers, from 4th Battalion, 5th Air Defense Artillery, fire a missile using a man-portable, air defense system, or MANPAD, during a live-fire exercise on July 31, 2011, at Fort Hood, Texas. (Photo courtesy of 69th ADA BDE)

State of the Field Artillery

By BG Brian McKiernan

It's an exciting time to be a *Redleg* and I've never been more proud to be one. As I complete my first 90 days as the commandant of the United States Army Field Artillery School and chief of the Field Artillery, I'd like to share my observations, and my conviction that we are the 'King of Battle.'

Soldiers - the strength of the branch. First and foremost, the Field Artillery is and always has been about people. As I travel and visit with units across the branch I am continually amazed with the quality of our Soldiers and leaders. Field artillerymen are proud of their *Redleg* heritage and their performance over the past 10 years of combat operations. They speak with great pride about how the branch has demonstrated excellence in conducting the full spectrum of tasks, from Field Artillery operations in complex environments, to maneuver operations, patrolling and conducting raids, to security force missions and most recently security force assistance advisor team missions. *Redlegs* have and continue to perform magnificently!

The performance of our Soldiers, leaders and units will forever be documented in the history of our Army and the Field Artillery Branch. Our joint Fires observers (JFOs) have proven themselves on the battlefield. The JFO program progressed from an operational need and concept at the start of the War on Terror to a true combat multiplier in the current operational environment. This is undoubtedly one of the most noteworthy developments of the past 10 years. Equally impressive has been the agility demonstrated by our firing units to take on multiple roles. Our Soldiers and leaders have executed an incredible breadth of tasks and have performed exceptionally well in every instance.

Today, 29,000 Soldiers serve as *Redlegs* on active duty and 17,000 more serve in the National Guard. As the Army develops its end-state size and structure across all three components, active, reserve, and National Guard, it's important to keep in mind that our branch will also wrestle with making appropriate adjustments to Field Artillery structure to support our maneuver brothers. Throughout all these changes, one thing is certain; our maneuver brothers will always be able to count on *Redleg* Soldiers.

Institutional training - preparing Soldiers and leaders. The current operational environment is complex, and there have been some challenges to integrate Fires. The greatest requirement identified over the past 10 years has been precision. As I've come on board at the Field Artillery School, I've been impressed with how the school has evolved over the past few years to train and develop our Soldiers and leaders. I believe we've appropriately incorporated the lessons learned from combat in order to train techniques and equipment employed in

the current operational environment while maintaining the rigorous standards of precision our branch has always implemented. I'd like to share a few institutional training updates that I believe will better prepare our Soldiers and leaders.

As fire supporters, we've worked hard to develop the equipment, training and skills to effectively employ precision and near precision munitions in the fight.

Use of equipment, such as the pocket sized forward entry device (PFED) and knowledge of the precision Fires software, must be second nature in order to effectively support operations in future the operational environment. Within the Field Artillery School, we've reoriented our training programs to provide the knowledge and skills to employ the equipment we carry. Our first target group was our youngest Soldiers. Recent program of instruction (POI) changes for the 13F, Fire Support Specialist) Advanced Individual Training (AIT) included the addition of PFED familiarization training. Although not a skill level 10 task, familiarization training and hands-on opportunities expose our youngest Soldiers to the equipment they'll use in their future fire support teams.

Over the past couple of years, a significant amount of energy was expended to update the POIs for our institutional leader training. The NCO Academy recently incorporated a number of adjustments to their POI to provide better, more relevant training to our 13F NCOs. NCOs in the Advanced Leaders Course now receive 40 hours of target mensuration and PFED precision Fires software training. The Senior Leaders Course has expanded to include training on weaponeering, target mensuration and the joint operations targeting process. The Warrant Officer's Basic Course students are now receiving 40 hours of instruction on collateral damage estimates and an additional 40 hours of instruction on target coordinate mensuration. The Warrant Officer's Advanced Course students now receive 80 hours of instruction in joint operational Fires and an additional 40 hours of instruction on target coordinate mensuration. As you can see from the emphasis and adjustments in POIs, we're focused on providing all the skills necessary to rapidly plan, coordinate, and deliver precision Fires.

Some of the greatest adaptations we're working are in the Basic Officer Leader Course (BOLC). Collaboration with the Maneuver Center of Excellence (MCOE) and the Aviation Center of Excellence (AvCOE) by our 428th Field Artillery Brigade and our fire support cell at the MCOE have produced a Collaborative Leader Development Exercise (LDX) that pairs captains attending the Maneuver Captain's Career Course (MCCC) at Fort Benning, Ga., and captains at the Aviation Captain's Career Course (AvC3) at Fort Rucker, Ala., with Field Artillery BOLC students at Fort Sill, Okla. The school is leveraging Virtual Battlespace 2 (VBS2) as the gaming platform, and recent experiments have integrated a Call for Fire Trainer (CFFT) with great success. Overall, this initiative has allowed us to evolve to a live, virtual, constructive and gaming instructional methodology as part of Army Learning Model. These LDXs have proven successful in teaching students (maneuver, aviation and Field Artillery) the fundamentals of fire support planning and integration, and airspace command and control. We've also noticed an enduring effect: the collaboration provides these officers a chance to prepare for and grow comfortable with their future operational assignments.

Another promising development within the officer professional education model is the newly implemented JFO Assignment Oriented Training (AOT). Every BOLC graduate with a follow-on assignment to a brigade combat team (BCT) will attend the JFO AOT course. Successful completion of JFO AOT provides the officer the L7 skill identifier. Our young officers have performed superbly in Afghanistan, Iraq and around the world, and I'm confident that these additional skills will enhance their abilities to support their maneuver commanders.

Organizational design - anticipated changes. As field artillerymen, our mission is to provide Fires in support of our maneuver forces. One of our observations over the past several years has been that we can do better at locating targets, minimizing target location errors, and executing proper fire support training, certifications and leader development. To enable a specific focus on these issues, we've asked the Army to consider a force design update that will reorganize fire support Soldiers and leaders back into the Fires battalions. We believe approval of this force design update will standardize fire support training, refine our certification and leader development procedures, and ensure better support to our maneuver forces.

Another important challenge we've identified is our ability to support our division commanders. We've recognized the incredible capabilities provided in our Fires brigades and realized the need to be directly aligned with each of our divisions. To address this capability gap, the Army plans to grow three more Fires brigade headquarters in the active Army, and one in the Army National Guard. The establishment of these new brigade headquarters enables a Training and Readiness Authority (TRA) relationship with the BCT Fires battalions and provides a fire support coordinator (FSCOORD) to each of our division commanders. This is a good news story and will be incredibly beneficial in synchronizing Fires and sustaining standards of precision in the Field Artillery.

Doctrine - catching up. The Army has begun a significant effort to redesign and rewrite all

doctrine. The first step for the Fires Warfighting Function is the development of Army Doctrine Publication (ADP) 3-09. ADP 3-09, *Fires*, is a 10 page document that updates the functional concept from earlier Air Defense Artillery and Field Artillery doctrine to describe the integration of Fires in the current operational environment. ADP 3-09 provides the 'what, not the how,' and it expresses the principles that will enable Army forces to seize, retain and exploit the initiative in order to gain and maintain a position of relative advantage in sustained/simultaneous offensive, defensive and stability tasks. Simultaneously, the Fires community is writing Army Doctrine Reference Publication (ADRP) 3-09, *Fires in Support of Unified Land Operations*, which will be no more than 100 pages and will provide the fundamentals of Fires in support of offensive and defensive tasks. Both ADP 3-09 and ADRP 3-09 are expected to be published this fall.

As a branch, we are focused on the development of FM3-09, *Field Artillery Operations*, a 200 page document that will provide the tactics and procedures for all Field Artillery units. Our Directorate of Training and Doctrine has recently begun drafting this manual, and we anticipate its publication by December of 2013. Simultaneously, we're developing Army Technique Publications (ATPs) which describe doctrinal techniques applicable to the branch. Two of the more prominent ATPs will be Techniques for Observed Fire and Techniques for the Targeting Process. I'm encouraged by the development of these documents as they capture the lessons learned from our recent combat experiences while establishing a firm foundation for operational standards.

Equipment - modernization efforts continue. The branch continues to research and develop the suite of equipment and munitions to ensure the greatest effects and precision. Improvements and upgrades to our self-propelled howitzers, radars, and our precision munitions are at the top of our list for continued modernization. The Paladin Integrated Management (PIM) program is a modernization effort that consists of a self-propelled howitzer and a CAT (Carrier Ammunition Tracked) designed to replace the aging M109A6 fleet. PIM improvements include: electric elevation and traverse mechanisms and electric rammer; engine, transmission, final drive, suspension and track are common to the Bradley Infantry Fighting Vehicle; improvements in force protection and survivability with a new hull design and add-on armor packages; fully network capable; integration of CREW III and a remote weapon station; accommodations for future technology insertions. PIM will not change key capabilities such as range and rate of fire found in the Paladin system.

Our current Q36 and Q37 radars have served us well over the past 25+ years, but we've arrived at a point where we needed to update their capabilities. An aggressive research and development program has produced the new Q-53 radar which is in production and will soon be fielded to our units. With a new 360 degree mode, increases in detection range and reductions in target location error, we are excited to complete the production of this system and get it to our Soldiers in the field.

The future - the 'King of Battle!' The Army has certainly evolved over the past several years, so has our branch. Discussions continue at the highest levels about how to best support our nation as we look to the future. While there are a lot of things we don't know, there are a number of things we do. TRADOC Pam 525-3-4, *The United States Army Functional Concept for Fires*, provides great insights into how the Army will incorporate the Fires Warfighting Function in the future. In fact, it specifically states "success in a wide range of contingencies is dependent upon operationally adaptable Fires Soldiers, leaders and organizations that are capable of full-spectrum operations." As stated earlier, *Redleg* Soldiers have earned their place in the design of the future force.

Given this truism, we will continue our efforts to sustain excellence. We will continue to identify, recruit and integrate the best Soldiers and officers into the branch. Our institutional training will be oriented on training the newest, most important tactics, techniques and procedures while ensuring our Soldiers and leaders truly know and understand the standards that enable excellence.

Our research and development programs will continue to focus on fielding the suite of equipment that enables scalable lethality and effects that meet the intent of our supported maneuver commanders.

With the Soldiers and leaders I've observed in this branch, I'm confident we will remain the ***'King of Battle!'***

Fires change of command ceremonies

4 May 2012

FCOE and Fort Sill. MG David D. Halverson relinquishes command to MG James M. McDonald

May 2012

3 May, 1-321 FA. LTC James Wanovich relinquishes command to LTC Kareem Montague

4 May, FCOE and Fort Sill. MG David D. Halverson Relinquishes command to MG J. Mark McDonald

10 May, USAG Fort Carson. COL Robert McLaughlin relinquishes command to COL Dave Grosso (SF)

11 May, 2-82 FA. LTC Robert Wright relinquishes command to LTC Robert Hensley

23 May, 157th INF BDE. COL David Bushey relinquishes command COL Brandt Deck (SF)

24 May, 1-30 FA. LTC Nick Mauldin relinquishes command to LTC Robert Krieg

JUNE:

1 June, 1-7 FA. LTC Andrew Gainey relinquishes command to LTC John Mountford

5 June, 2-15 FA. LTC John Clement relinquishes command to LTC Chris Wendland

6 June, 3-13 FA. LTC Thomas Roe relinquishes command to LTC Steven Carpenter

13 June, 2-29 FA. LTC Tom Bolen relinquishes command to LTC Michael (Tony) Crawford

13 June, 434th FA BDE. COL Gregory Dewitt relinquishes command to COL Michael Dvoracek

14 June, 2-319 FA. LTC James Bailey relinquishes command to LTC Albert Paquin

19 June, 2nd Brigade Combat Team, 1st Armored Division. COL Daniel Pinnell relinquishes command to COL Thomas Dorame (AR)

22 June, 3-27 FA. LTC Thomas (Blaine) Ham relinquishes command to LTC Chris Valeriano

26 June, 2-2 FA. LTC Patrick Gaydon relinquishes command to LTC Chris Compton

26 June, 1-15 FA. LTC Yi Se Gwon relinquishes command to LTC Jeremy McGuire

27 June, 1-14 FA. LTC Robert Picht relinquishes command to LTC William Johnson

27 June, 19th BCD. COL Stephen Maranian relinquishes command to COL Steven Hite

28 June, 4-25 FA. LTC Chris Taylor relinquishes command to LTC Robert Marshall

29 June, 428th FA BDE. COL John Drago relinquishes command to COL Gene Meredith

30 June, USAG Fort Bragg. COL Jeffrey Sanborn assumes command

1-84 FA, LTC John O'Grady will relinquish command in June to Major Matt Winters in preparation for the unit's deactivation in October.

RED BOOK 2012

Deadline for unit submissions is Aug. 13, 2012.

The annual Red Book highlights FA, ADA and USMC (active, Reserve and ARNG) unit activities at the brigade level and lower (as applicable). Unit submissions, Fires on Target, capture significant unit events such as deployments, training, etc., for the past year (2011 through 2012). Submissions should not include MWR events or unit functions such as St. Barbara's Balls.

An example of an appropriate submission is below:

5th Battalion, 5th Air Defense Artillery Regiment, Dragon Slayers, Joint Base Lewis-McChord, Wash.

"Soldiers from the 5th Battalion, 5th Air Defense Artillery, Dragon Slayers, redeployed to Joint Base Lewis-McChord, Wash., following their mission in support of Operation Iraqi Freedom, and Operation New Dawn, where they were responsible for counter-rocket, artillery, and mortar, (C-RAM) operations across operating bases in Iraq.

In March of 2011, the battalion reorganized into an Avenger battalion to align with its original mission. In July of 2011, the battalion, again, reorganized into a C-RAM unit. The battalion is currently focused on individual and platoon level training with their new equipment and mission. Additionally, the battalion is moving into new facilities on Joint Base Lewis-McChord and building a C-RAM training laboratory designed to facilitate crew training.

While the battalion is refocusing its mission, members are continuing to build relationships with the local community by partnering with Beachwood Elementary School on Joint Base Lewis-McChord. The battalion is currently in the training phase of Army Force Generation and continues to prepare for future operations."

Deadline for unit submissions is August 13, 2012. Space in the *Fires Bulletin* is limited by contract, and once filled, we cannot add pages. Submissions received after maximum page count is reached will not be published. Submissions received after the deadline are less likely to be published due to budget constraints and contract limitations. Submissions are published on a 'first-come, first-served' basis and are limited to 250 words per organization. Units may submit directly to the *Fires Bulletin*; however, it is recommended you provide a copy of your input to your next higher headquarters. Submissions not meeting the 250 word limit will be returned to the unit or edited by the staff as time allows.

Fires on Target. These unit submissions capture significant unit events such as deployments, training, etc., that have occurred during the past year (2011 through 2012). For easier tracking purposes, the highest level unit is responsible for facilitating their organization's submission as a whole; however, to ensure as many Fires units as possible are represented in the Red Book, we will accept input for all levels of command. Again, we request you provide a copy of your input to your higher headquarters for accountability purposes. Please provide unit write-up in a Microsoft Word document **ONLY,** in a paragraph format. Limit submissions to 250 words per organizational element. DO NOT embed photos but forward them separately as discussed in the next paragraph. Also provide unit nicknames, unit websites and/or Facebook page URLs to include in the article. All submissions should be emailed to the Fires Bulletin at Fires.bulletin@us.army.mil. Submissions must be clearly marked as "2012 RED BOOK – ADD YOUR UNIT DESIGNATOR HERE."

Photo submissions. DO NOT embed photos or place within the word document; the original files need to be attached SEPARATELY as .jpg, .png, or .tiff files in an e-mail to Fires.bulletin@us.army.mil. You may also use the ARMDEC SAFE site to upload photos at https://safe.amrdec.army.mil/SAFE2/. Photo submissions must be clearly marked as "2012 RED BOOK PHOTOS – ADD YOUR UNIT DESIGNATOR HERE." Note: Due to email mailbox size restrictions, please send high-resolution photos one to two at a time. Include all photo caption information: who (names of people in the photo), what (type of equipment, name of exercise supported, etc.), when and where the action in the photo took place. Include who took the photo (the photographer's first and last name, rank and unit) to ensure appropriate photo credit.

Unit Maps: All unit location maps must be updated with current information. They are currently listed online as "Active Army and USMC FA and Army ADA in CONUS," "ARNG and USMCR FA and ARNG ADA in CONUS," and "Active Army and USMC FA, Active Army and ARNG-ADA in OCONUS." If your unit information is listed incorrectly, please send an email with updated information (full unit name, active or ARNG and location) clearly marked "2012 RED BOOK MAP – Add Your Unit Designator Here." to Fires.bulletin@us.army.mil.

Point of contact for this memorandum is Paul Jiron, Assistant Editor, 580-442-5121, or Jennifer McFadden, Managing Editor, 580-442-6806, (DSN 639).

Fires Leader Development:

Leaders Committed to the Army Profession, Capable of Supporting a Range of Missions from 'Mud to Space'

By LTC Kyle Foley and LTC Charles "Hawk" Mills

This paper discusses leader development concepts for future Fires leaders integrating all indirect Fires, air and missile defense, joint Fires electronic attack through the targeting process in support of decisive action to meet the needs of the 21st Century Army.

The mission. To develop Fires leaders for the Army of 2020 enabled with the knowledge and confidence to integrate Fires in support of offensive, defensive and stability tasks as they apply through all aspects of joint, interagency, intergovernmental, and multinational (JIIM) spectrums of conflict from the tactical through the strategic level.

Central idea. The Army of 2020 will require Fires leaders who possess the appropriate skills, knowledge, and experience to integrate Fires in support of offensive, defensive and stability tasks and operate with the JIIM partners from tactical to strategic levels.

Fires in support of offensive, defensive and stability tasks, capabilities and responsibilities in Fires organizations require a new approach to leader development in order to grow Fires leaders who can deliver the art and science of planning, coordinating and integrating indirect Fires, AMD, and joint Fires (including EA). This information paper does not discuss or explore the idea of merging the Air Defense Artillery and Field Artillery branches. The Army continues to require specific ADA and FA expertise in branch specific billets. It only discusses opportunities where Fires leaders could potentially serve in any Fires assignment, given the proper skills, knowledge, and experience (battalion, brigade and higher).

Current operational context. In the last 10 years of war, Fires has proven its ability to provide operationally adaptive Fires in a wide variety of offensive and defensive missions. In an era of competing resources, the ability to create a leaner and cost-effective solution to manning the joint force and Army of 2020 is important to ensure flexibility for national security decision makers in support of the president's national security strategies.

Today, Army doctrine is evolving. In order to understand who we are as Fires leaders, we must understand our doctrine. In

Leader Development

Army Doctrine Publication (ADP) 3-0, *Unified Land Operations*, the Fires warfighting function is one of the six warfighting functions, "…that commanders use to accomplish missions. The Army's warfighting functions are fundamentally linked to the joint functions."

ADP 3-0 goes on to define the Fires warfighting function as, "…the related task and systems that provide collective and coordinated use of Army indirect Fires, air and missile defense, and joint Fires through the targeting process." Fires leaders, both Air Defense Artillery and Field Artillery, are responsible for planning, integrating, coordinating and executing operationally adaptive Fires in support of both offensive and defensive unified land operations. To be effective, we must understand Fires doctrine and be the Fires subject matter expert for the joint and maneuver force commanders. Fires leaders have gained valuable combat experience conducting stability operations, particularly counterinsurgency operations. In particular, the skills and effectiveness of our Air Defense Artillery Soldiers and leaders have significantly increased within our Patriot battalions and ADA brigades. However, due to conducting in-lieu-of missions in support of maneuver operations and restructuring of the Fires force, the core competencies of the Fires leader have degraded across our service.

Assessment. Lessons learned, feedback from the operational force, previous force structure decisions and analyses of trends at the combat training centers (CTCs) have noted a significant down-turn in job knowledge of our Fires leaders at the battalion and battery levels. Fire support officer (FSO)/fire support noncommissioned officers (NCOs) lack the knowledge to effectively perform their jobs, and train their Soldiers in offensive Fires to support the maneuver commander.

The force structure removal of the divisional ADA battalions over the years is the predominate reason our AMD leaders have limited maneuver and brigade combat team (BCT) experience. Air defense trends within our air defense airspace management/brigade aviation element (ADAM/BAE) at the CTCs have also shown a lack of understanding of our junior officers and senior NCOs, in their ability to conduct basic planning and mission execution; expertise required to accomplish defensive Fires missions.

Our junior Fires leaders in Fires units at echelons above division (MLRS, Patriot, etc.) gain little or no maneuver experience, thus we are not getting the experience needed in our senior leaders.

Mid-grade Fires leaders, who gained tactical experience in their branch core competencies prior

"…The past 10 years of war have drastically changed our doctrine, equipment, organization and leader development; however, in the midst of all this change one critical asset remains steadfast: the Fires Soldier… Without looking past the current fight, we must analyze and prepare for future threats…part of our job as leaders is ensuring our Soldiers and junior officers have the knowledge and the confidence to apply all aspects of joint Fires." -Commanding General of the Fires Center of Excellence, MG David D. Halverson, January-February 2012 Fires Bulletin.

to Operation Iraqi Freedom-Phase II, today lack the experience and expertise to properly advise headquarters staffs at major commands, joint, and Department of the Army Headquarters (HQDA) in all aspects of Fires in support of offensive, defensive and stability tasks. The Army's current approach is to take mid-grade officers and NCOs from the operational force, with tactical Fires experience, and assign them to these higher-level staffs, and expect them to excel at the operational and strategic levels.

So, from the current assessment of the Fires force, we have significant challenges within the Fires community that we must overcome to meet the requirements of the Army of 2020. Obviously, reality is more complex in the art and science of military discipline.

The Fires Center of Excellence faces a unique set of pressures these days, unknown to any other Fires center of its time. The bar of prosecuting Fires in support of offensive, defensive and stability tasks in support of joint and Army commanders has been raised dramatically due to the current operational environment. Developing nations have their own unprecedented challenges for military success, particularly as they make the transition to more industrial economies and more democratic and decentralized governments. At the same time, our Army is increasingly expected to compensate for the shifts in society as well as shifts in military capabilities.

No one really knows what the working world or, indeed, what civilization and culture worldwide will be like in the next 10 years. The safest azimuth check we, as a Fires force, can predict is change. The FCoE can no longer prepare Soldiers to fight in a world purely stagnant in a Cold War or counterinsurgency mentality, because those worlds may no longer exist in the world of 2020.

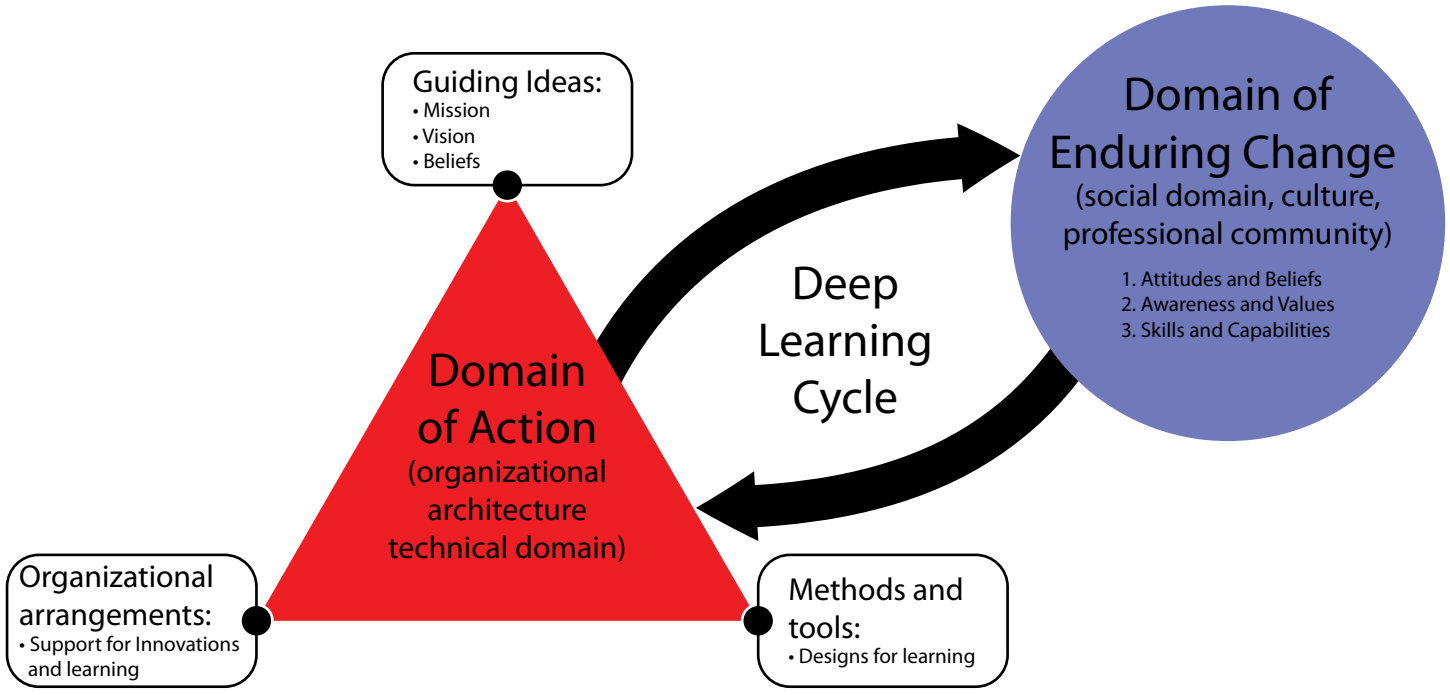
In this context, our aim in this information paper is to bring forth the idea and examine a framework for conditions and standards to develop Fires leaders who have the knowledge and confidence to integrate Fires in support of offensive, defensive and stability tasks as they apply to all aspects of joint, interagency, intergovernmental, and multinational (JIIM) Fires from tactical to strategic level.

By building an FCoE that learns – or more precisely, builds learning classrooms, learning schools, and a Fires learning community – we will create an approach that galvanizes a tremendous opportunity to define the Fires leader for the Army of 2020.

A different approach. In "The Fifth Discipline Fieldbook," author Peter Senge, Ph.D., provides an approach toward building learning organizations (Figure 1 below).

In his model, he suggests the domain of action in any organization (the policies, deliberate practices, rules, by-laws, and channels of authority) can be deliberately designed around learning. If this happens, Senge claims it would trigger a 'deep learning cycle' within the people of the organization that will then expose new kinds of experience and people to look at things differently; they

Figure 1: Senge's Model Building Learning Organizations



would take on new practices and approaches as their own. In other words, Senge argues, by making deliberate changes in structure, you can gradually produce changes in the way people learn.

Bottom line: Senge points out there is a direct relationship between structure and culture.

Terms associated with figure 1.

- **Guiding ideas**: explicit statements of the principles and values that the organization should stand for, and its purpose and direction
- **Organizational arrangements**: the means by which a school system makes resources available
- **Methods and tools:** those items that enable developing a learning classroom, school, or community in order to fulfill broad objectives

As we continue to explore emerging opportunities for posturing the Fires community of Army 2020, we have to ask ourselves the question of whether the Fires community has a shared vision, purpose and direction.

If the answer to that question is in the affirmative, we must then ask ourselves whether the current structure of the FCoE is effectively postured to develop Fires leaders for the Army of 2020. Do they have the knowledge and confidence to integrate Fires in support of offensive, defensive and stability tasks as they apply to all aspects of joint, interagency, intergovernmental, and multinational (JIIM) Fires from tactical to strategic level?

That said, Senge's model becomes more useful as we continue to explore opportunities in potentially reengineering our military level education models for developing Fires leaders for the Army of 2020.

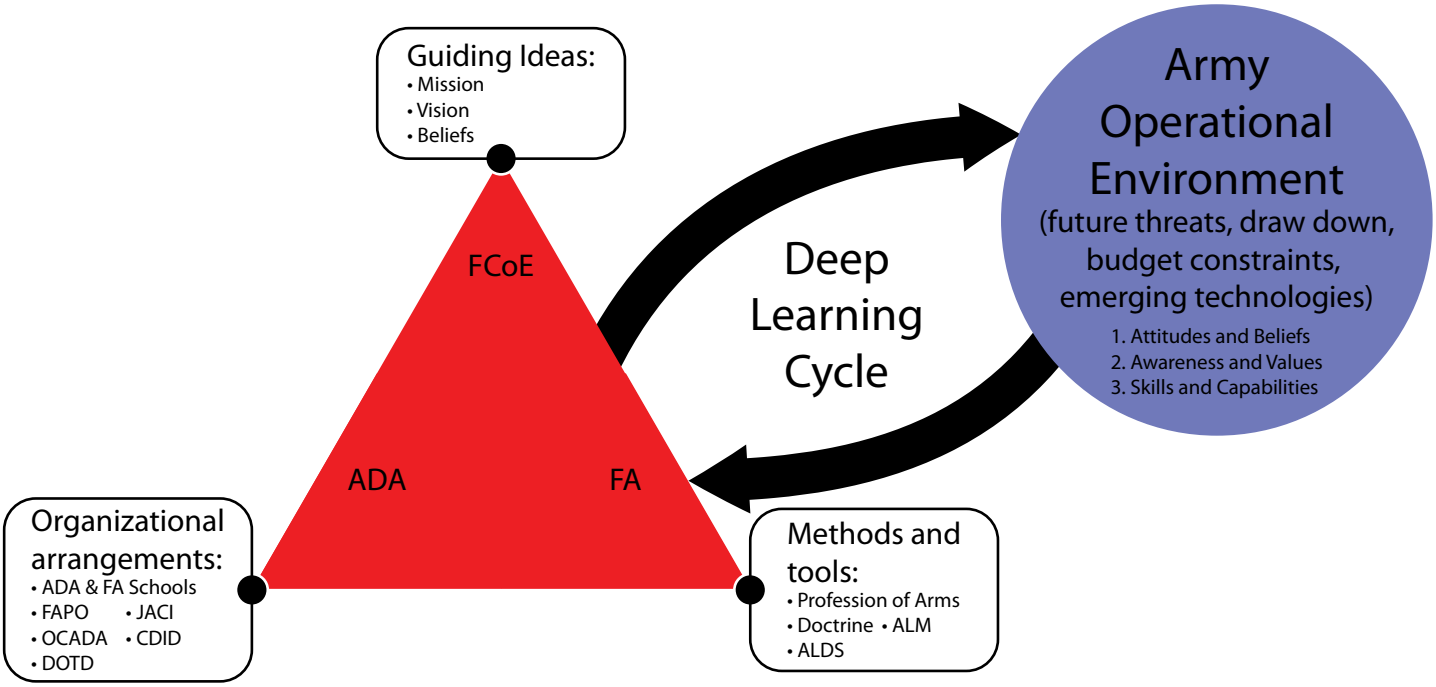
Figure 2 illustrates a model that alignsthe FCoE's guiding ideas, organizational arrangements, and the methods and tools to reinforce a climate that develops new attitudes and beliefs, skills and capabilities, awareness and values.

So in theory, the FCoE – an organization that establishes Fires policies, deliberate practices, rules, by-laws, and channels of authority – can be deliberately designed around learning. If this happens, then its structure would trigger a 'deep learning cycle' within the FCoE itself. The FCoE would be exposed to new kinds of experiences where Fires leaders would see how their experiences manifest themselves differently; they would take on new practices and approaches as their own.

In other words, by making deliberate changes in structure, one can gradually produce changes in the way people learn. This theory is driven by the relationship between structure and culture as seen within the model. At this point, let's continue to explore the opportunities within the 'deep learning cycle' and how it applies to emerging opportunities in the development of the Fires leader in the Army of 2020.

Let's revisit our FCOE's guiding ideas for the Fires community. Senge states, "without powerful guiding

Figure 2: FCoE Model Building Fires Learning Organizations



ideas related to teaching and learning, there is no solid, over-arching sense of direction or purpose."

The Fires vision. The world's most versatile Fires force, with agile and adaptive Soldiers and leaders; fielded with integrated and interoperable systems; capable of delivering accurate and responsive Fires in any environment, from 'mud to space,' at any time.

- A decisive Fires force that provides dominate, responsive, scalable and accurate Fires for the joint commander at the time and place of his choosing
- Systems with integrated capabilities that leverage commonalities and provide unprecedented reach and mobility by incorporating full range of earth to space assets
- Learning organizations that achieve decision superiority and responsiveness in the information environment through collaboration, outreach, coordination, and communication
- Receive world-class education and training to develop agile leaders who are experts in the art and science of the 'Fires' warfighting function
- Confident, competent, disciplined warriors and leaders committed to the Army values

The Fire Center of Excellence mission. "…trains, educates, and develops U.S. Army and other services' Fires Soldiers and leaders; designs, develops, and integrates joint Fires capabilities, concepts and doctrine; and provides joint & combined Fires training to the joint force and multinational partners to advance joint Fires readiness and integrate the Fires warfighting function into Army operations."

Assuming the FCoE has adopted the theories within the 'deep learning cycle,' we will now explore the potential blended learning opportunities within the current Fires training model for military level education. As seen in Figure 3, the FCoE (Domain of Action) has two distinct schools providing the education and development of Air Defense Artillery and Field Artillery Soldiers. Currently, the *Army Personnel Development System* (AR 600-3) prescribes personnel developer responsibilities in career field management for Soldiers and civilian occupational series under their respective personnel management systems.

For reference, we will illustrate this system (over the span of a Soldier's career) to portray that as a Soldier progresses his/her opportunities to serve at higher levels of responsibility and rank diminish over time. The larger triangle represents the Fires warfighting function in its entirety (in red) and the two smaller triangles represent the two distinct branches within the Fires warfighting function (in gold).

As we develop Soldiers in the two branches, what emerges are military education and assignment gaps within the FCoE that may be further explored as potential opportunities for broadening the development of our Fires leaders (Figure 3). It is here that we can further explore opportunities to develop a Fires leader for the Army of 2020. However, our exploration must not stop there. We must also analyze the skills, knowledge,

Figure 3: Fires Cognitive Leader Development Model

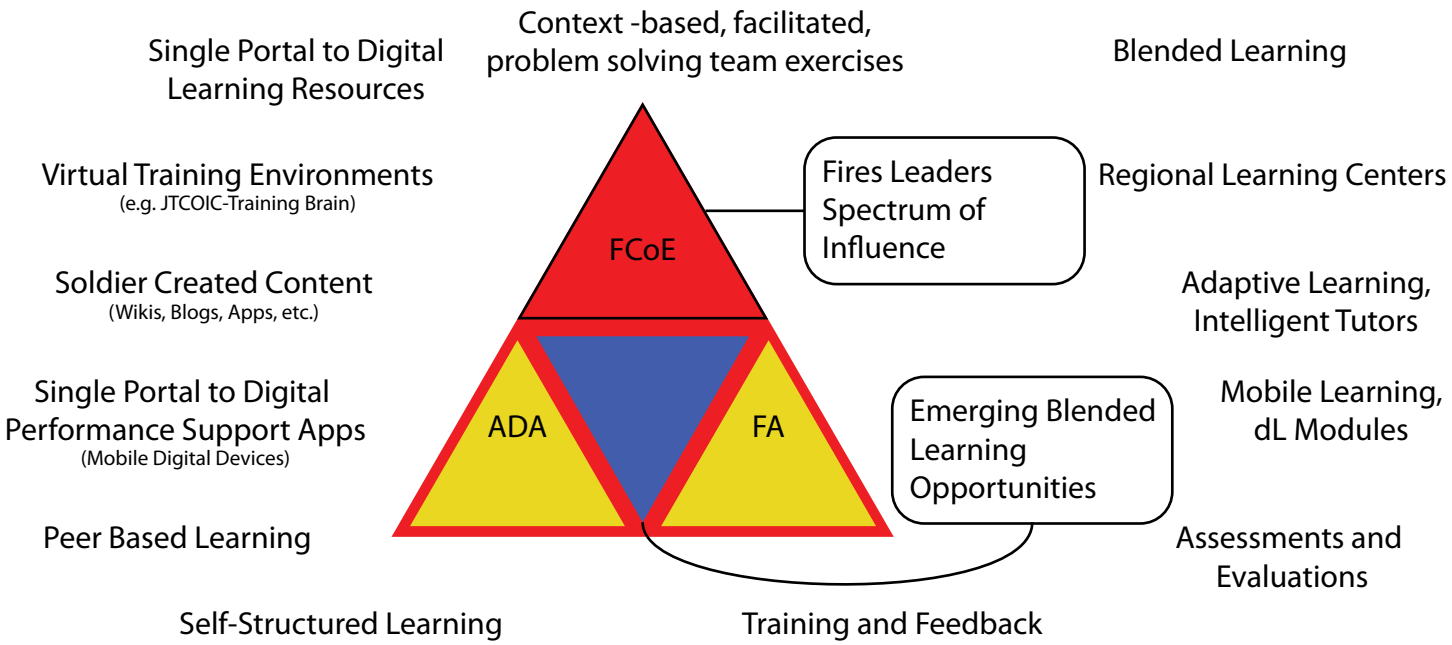
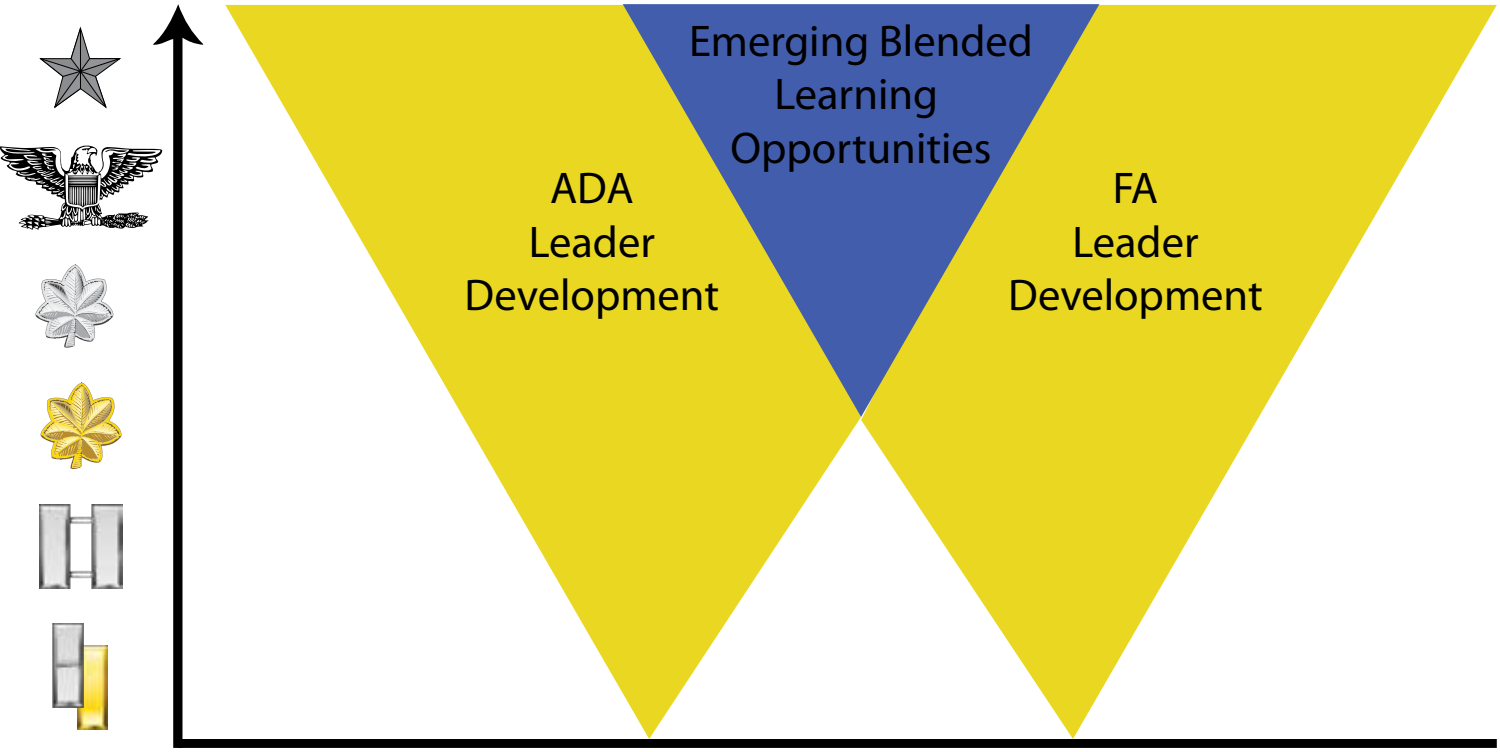


Figure 4: Skills, Knowledge, Experience Continuum



and experience of the leader and their effect within the 'deep learning cycle.'

As a Soldier enters the military, over time he/she develops skills, knowledge, and experience in their occupational specialties (Figure 4-Above). As depicted in the model, with respect to the two FCoE schools, there become opportunities to broaden the development of our Fires leaders.

So, as depicted in both the Fires Cognitive Leader Development, and Skills, Knowledge and Experience Continuum illustrations, a common thread emerges that blends ADA and FA skills. These training and leader development opportunities within the Fires military-level education model may assist us in defining the Fires leader for the Army of 2020 (Figure 5-page 26).

As an example, a Field Artillery major could serve as an indirect fire protection capability (IFPC)-Avenger battalion executive officer or ADAM/BAE OIC. And an Air Defense Artillery major could serve as a Multi-Launch Rocket System (MLRS) operations officer.

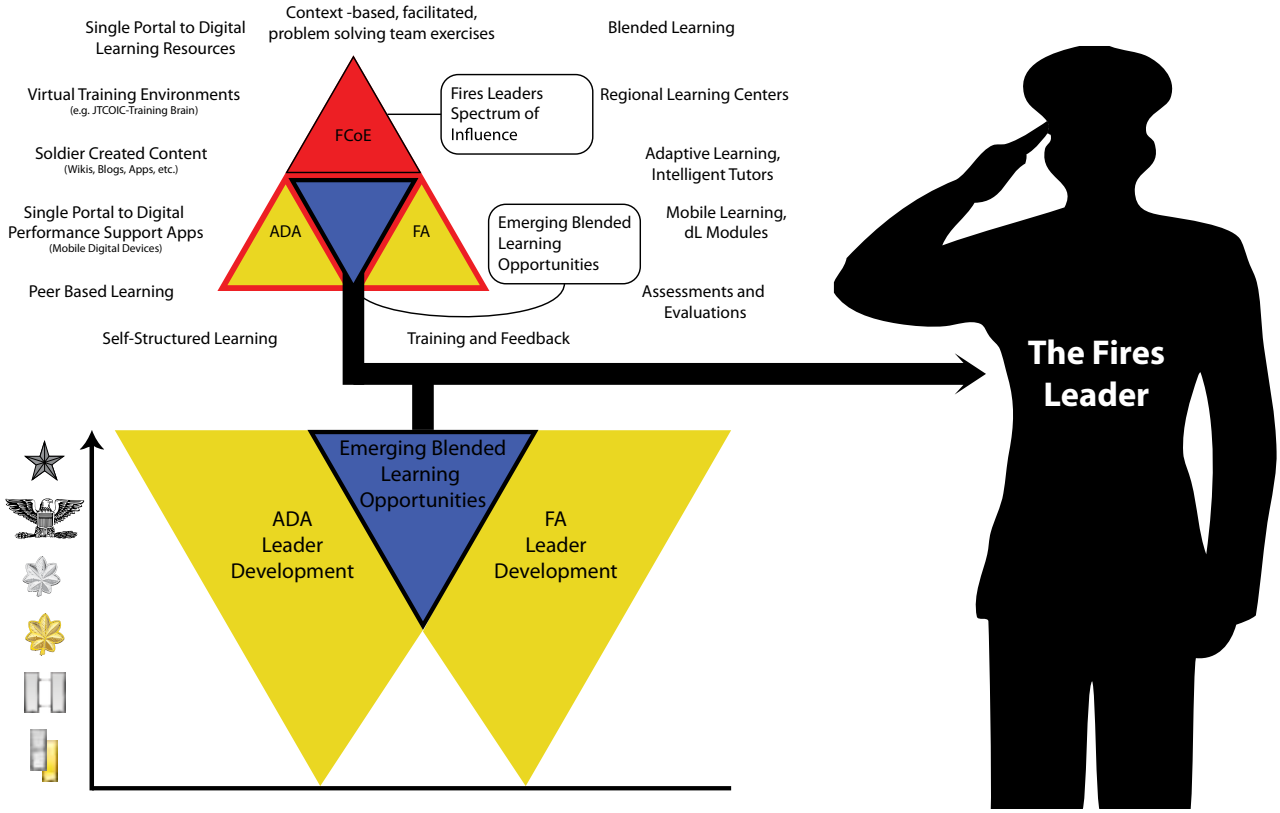
From both these examples, provided each officer has achieved the appropriate skills, knowledge, and experience, he/she could serve as battlefield coordination detachment (BCD) commander. Blending education opportunities could begin at the Captains Career Course (CCC) or at Intermediate Level Education (ILE) to facilitate these examples. Developing the competencies required to enable exchanging Fires leaders between ADA and FA positions may require serving as executive officers and operations officers in their respective branch KD position followed by serving in positions normally reserved for the other branch.

However, further analysis and study of the Fires military level education continuum will be required to determine the optimal model for developing Fires leaders with the desired military education and experience.

Current vision. Let's revisit the FCOE's current vision and mission statements. When defining shared vision, Senge states that a shared vision is a force in people's hearts, a force of impressive power that is palpable. Simply stated, Senge argues that vision is truly shared when people begin to see it as if it exists. There is a commonality that permeates the organization and gives coherence to diverse activities and is vital for the learning organization because it provides the focus and energy for learning. A shared vision, Senge says, is the answer to the question, "What do we want to create?"

Given all that we've discussed up to this point, we have to clearly define the Fires force we want to create. Once we as a Fires community take the time to concentrate our intellectual energy and collective wisdom on this important issue, we will become better postured to provide a vision that enables us to feel connected and bound together by a common aspiration.

Figure 5: The Fires Leader



That clear vision will bind the Fires community together for a common purpose.

Past lessons. During the early Cold War years, on Aug. 30, 1945, the deputy chief of staff for the Army scrutinized the overall Army organization and its operations. The board of officers on the reorganization of the war department, chaired by LTG Alexander M. Patch, urged combining the cavalry and armor forces to create the armor branch, and the merging of the coast artillery with its antiaircraft artillery mission and the Field Artillery into one artillery branch. This was done as a cost-saving measure, and as a means of gaining flexibility in officer assignments by permitting them to serve in any one of the three artilleries. Also, at the direction of the Army field forces, the Artillery School reinstituted cross -training to reduce costs and promote flexible officer assignments in the face of acute career artillery officer shortages.

In May 1951, a board of officers from Fort Sill, Okla., and Fort Bliss, Texas, developed an integrated Artillery Officer Advance Course of about 11 months for fiscal year 1952, which began in July 1951, to train 200 regular Army Field Artillery officers with at least five years of experience, 100 regular Army antiaircraft artillery officers, 50 Marine officers, and 50 allied students on Field Artillery and antiaircraft artillery tactics, techniques, and procedures and weapons. Out of the 11-month course, nine months of training would be at Fort Sill with the rest at Fort Bliss.

On March 22, 1952, GEN Mark W. Clark, chief of the army field forces, expanded the integrated training initiative beyond the advance course. He directed the Artillery School and Antiaircraft Artillery School to develop an integrated Associate Battery Officer Course for newly commissioned regular army or reserve component second lieutenants, an integrated Associate Officer Advanced Course for reserve component officers or regular Army officers who required refresher training,. He also established an integrated Battery Officer Course for regular Army officers with at least two years of experience to complement the integrated Artillery Advance Officer Course for regular Army officers beginning with the academic year of 1952-1953.

Indications of shortcomings of integration emerged in 1965-1966, and caused cross assignments to be severely restricted which was reminiscent of the pattern established in the Korean War when integration basically did not exist. The challenging Field Artillery gunnery problems encountered and, the short tours that emphasized the need for officers to arrive in Vietnam fully competent as Field Artillery officers prompted the Army to form a study group in 1966.

The Field Artillery Branch Study of 1966-1967

investigated the impact of current officer personnel policies upon the combat efficiency of units and upon the proficiency of the individual artillery officer. The study concluded, "Integration of artillery training has spawned mediocrity. The Advanced Course has been necessarily oriented to officers who cannot assimilate the desired level of instruction without first being provided the basics. The cross-training for at least 70 percent of the class represents time, money and effort which will never be recovered."

By no means do we present the arguments above to discourage any discussions about emerging possibilities of cross training among the two branches, in which we do want to highlight the importance of placing our intellectual energy and collective wisdom toward defining what Fires leaders want to create for the Army of 2020.

In the historical references above, it appears that cost-savings was the driving criteria for decisions to merge the two branches. As mentioned earlier in this information paper, our aim is only to explore opportunities as well as provide options to examine who and what type of Fires leaders to develop in order to meet the Army requirements of 2020.

Currently, we must retain the knowledge of the last 10 years of conflict while maintaining our ability to conduct combined arms maneuver in a joint environment. We must develop Fires leaders who are committed to the Army profession and capable of supporting a range of missions from 'mud to space.'

Leader development of our junior Fires leaders must first, and primarily, be focused on building a foundation on their basic branch competencies. As these Fires leaders grow, we must provide blended and broadening opportunities to prepare them for the challenges they will encounter, both within and outside the Fires branches.

Headquarters staffs at major commands, joint, and HQDA will require Fires leaders to be knowledgeable in all aspects of Fires in support of offensive, defensive and stability tasks, regardless of their basic branch.

Future Fires force. The future Fires force must master its ability to coordinate their Fires in support of offensive, defensive and stability tasks across the force in all spectrums of conflict, and identify and fill the gaps in its core competencies necessary to support the joint commander. We must be adaptive, versatile, and innovative to meet the challenges inherent to this key warfighting function for the Army of 2020 and beyond. They "…must be expert in their core and functional competencies. …they must be critical thinkers, effective communicators, and confident operators across the full spectrum."

Additionally, our senior Fires leaders must not only execute the Fires functions at a high level of proficiency, but they must have the ability to educate and train our junior leaders to "emphasize lifelong learning that provides both the Fires officers and noncommissioned officers opportunities that broaden and deepen their understanding of the complexities of operating environments to enable their successful management of uncertainty." We must educate our junior leaders in Fires courses throughout their careers and prepare them to conduct all aspects of Fires in support of offensive, defensive and stability tasks missions.

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Proposed Panel Questions

Question 1: How do we define a Fires leader of 2020?
- **What are the skills, knowledge and attributes a 'Fires leader' requires in 2020?**
- **Is developing a Fires leader attainable and feasible?**

Question 2: Where in a leader's career has the Fires leader met the requirements as defined?
- **…At what echelon?**

Question 3: Is the current structure of the FCoE sufficient, and appropriate to meet the needs of that future Fires leader 2020?

ADAPTIVE LEADERS:

The Relevancy of a Staff Ride to the Modern Field Artillery Battalion

Battlefield historian, MG David T. Zabecki (Ret.) gives Fires squadron's officers an overview of French defensive positions at Bois des Caures. (Photo courtesy of CPT Vinh Q. Bui, U. S. Army)

By CPT Vinh Q. Bui and 1LT Thaddeus C. Fox

The situation in which our Army finds itself today is one in which few Field Artillery company grade officers have sufficient practical training experience, outside of the schoolhouse, in combined arms maneuver. The situation is no different for our branch as mid-level leaders no longer possess the familiarity with and appreciation for the massed effects of Fires. Although technological advancement may allow the effects of massed Fires to be achieved with only small formations, we nevertheless lack an adequate appreciation for the true psychological effects of the artillery branch. Increasingly, the calculus for junior officers has changed to become focused on mitigation of effects and collateral damage estimation to the detriment of massed effects. Rather than thinking creatively about how to maximize our capability for effects through massing Fires and maneuvering weapon systems, we have spent our creative energy on learning how to mitigate those effects.

The assumption that is falsely generated by many junior leaders' experience with this type of warfare in stability operations is that we will always have more firepower than we will be able to use. This assumption is the result of a generation of officers working in wide area security scenarios, with only a single phase 'occupation:' where all maneuver engagements are relatively small; there are already well established communication networks; forward observers are always available; the enemy immediately breaks contact after artillery is engaged; and perhaps most importantly, the enemy has no capability to suppress our Fires. Our experience, performing what are essentially immediate action drills in response to calls for fire, falls short of what will be required for the planned fire by-phase, massive ammo consumption, and logistical preparation required by combined arms maneuvers. The reality is that Excalibur, precision guidance kits, and splitting of batteries into single

or two-gun sections will not make up for the effects achieved by massed, integrated, independently moving and deliberately planned Fires.

In the experience of young officers on the cusp of promotion, it is easy to believe we are competent in our own core branch functions because we have successfully completed training center rotations and combat deployments. We have effectively employed Field Artillery systems to adequately respond to maneuver requests for support, to defend fixed sites, to support brief meeting engagements, and have provided non-lethal effects. We, therefore, imagine ourselves the masters and subject matter experts in our own self-contained bubble of experience.

How much do we actually know of the core tasks required by the Field Artillery mission of suppressing, neutralizing, and destroying the enemy, and supporting our maneuver brothers by integrating fire support into combined arms operations?

For the majority of our Field Artillery junior leaders, the lessons of combined arms operations consisted of a few days of the antiquated Joint Army Navy Uniform Simulation (JANUS) exercise, utilizing landlines in the basement of a Fort Sill, Okla., office building at the Officer Basic Course.

Though the need to refocus on core competencies is the immediate focus across our transitioning Army, the means to achieve that focus remain less clear. While the terms 'back to basics' and 'focus on the fundamentals' are thrown about, we must think about their explicit meaning in the context of all our levels of leadership. While it is easy for us to slow down training, increase the number of uniform inspections, pull out the manuals and train to doctrinal standards, it is not as easy to address how to properly apply doctrine. The ever present plague of all post war armies is the redesigning of a force to address only the most proximal wartime experience. We would either train for the last war, or train for the war that we prefer to fight, rather than the development of an adaptable force ready to integrate new technology, understand new geopolitical issues, and face new enemies. Going back to the basics not only means a return to doctrine, it means studying the core tenants of Field Artillery doctrine, with an eye towards understanding the universal problems of utilizing Fire to support maneuver.

Back to the beginning. One of the best ways to study our profession is to go back to the beginning and place ourselves in the boots of its pioneers. Rather than looking at the lessons learned by the last war, we must academically study the development and history of our branch through all wars. When searching for the origins of Field Artillery and combined arms operation, there is something to be learned from even the earliest Field Artillery pieces used by Gustavus Adolphus in the 30 Years War (1618-1648). Then, the first time infantry formations were permanently assigned direct supporting field pieces to break up the dense infantry formations of the day.

However, to study the origin of modern fire support there is no better set of pioneers than the field artillerists of the First World War. This study is necessary in order to see the rapid evolution of the branch and to study the means whereby officers attempted to solve the problems of trench warfare through the application of firepower.

Throughout the war, artillery shifted from primarily a direct fire weapon used against an enemy arrayed generally in line -- into an indirect fire weapon targeting the enemy in depth. This paradigm shift forced the addition of observation methods, including aerial observers.

It also forced artillery theorists to discover means of registration whereby they could adequately predict Fires. To do this required an understanding of the effects of non-standard conditions achieved only by studying meteorology. With increasing range and indirect fire capabilities both sides had to mask the locations of their artillery by camouflaging them from ground and aerial observation, and from the effects of sound and flash ranging. The desire to achieve surprise also forced the necessity of first round fire for effects.

At the start of the First World War, the high explosive artillery shell was primarily a blast projectile with very little fragmentation effect. A separate shrapnel shell provided the fragmentation effect but produced very little blast effect. The advert of field fortifications compelled artillerists to adapt to yet another problem by requiring the introduction of dual effect high explosive shells. To find a solution to the problems presented by this paradigm shift to indirect fire required adaptable leaders to properly understand the problem set, experiment with solutions, almost always during combat, and then spread their ideas by demonstrating their efficacy on a limited scale before their theories were put into wide-scale use.

It is difficult to imagine that the relatively static trench warfare of the Western front almost a century ago could offer field artilleryman valuable lessons in adaptability. To better understand and appreciate these lessons, there is no better way than to conduct a battlefield staff ride to a First World War battlefield in order to study it in detail, and Verdun, one of the best preserved battlefields in Europe, would be a good start point. Forty-four officers and senior NCOs from Fires Squadron, 2nd Cavalry Regiment under the leadership of Squadron Commander, LTC Anthony Lugo conducted a three-day battlefield staff ride to Verdun in order to study this predominantly artillery driven battle.

For a field artilleryman, Verdun represented a tenacious battle of attrition, which saw the birth of many modern artillery applications that we still use today. Verdun started out with a nine hour German artillery barrage, dragged out into a 10-month artillery duel, and ended with a well synchronized and well integrated fire-maneuver offensive that allowed the French to regain

many of their lost positions. Verdun offered valuable analysis on the principles of war, especially mass, security, and surprise. Verdun also offered valuable insights into the origin of modern Field Artillery's development.

The battlefield of Verdun. Like many other battlefields of World War I, Verdun was the experimental grounds for the application and refinement of Field Artillery tactics, techniques, and procedures. The practical use of indirect Fires was brought to a very mature state only toward the end of the First World War. The battlefields of this war saw one of the earliest uses of aerial observation to direct and adjust indirect Fires. Friendly pilots would mark the spotting of friendly artillery Fires in relations to enemy forces by annotating it on maps or notes. These would then be dropped directly over the artillery firing positions by the pilots flying overhead to notify the artillery batteries to adjust fire. As primitive as it is by our standard, this technique proved very effective at Verdun.

The concept of call for Fire as we know it today was still very new in this conflict. Artillery support was generally planned and very difficult to adjust hastily once the battle has started. The concept of final protective Fires as we know it generally began with Infantry units who were issued signal flares to signal their request for Fires in an emergency. Many of these signals were never visually spotted by the artillery batteries in the smoke and confusion of the raging battle. Those artillery units that managed to see the signal flares and responded to the final protective Fire request frequently missed the target or ended up causing as much friendly casualties as they caused the enemy.

Despite the many initial flaws, the concepts represented initial attempts at coordinating for indirect fire support of embattled friendly forces that were eventually perfected with the progress of time. The Field Artillery doctrine that we employ today has its root in the ingenuity of artillerymen of that era.

The ingenuity and adaptability of leaders of the First World War were best demonstrated by one of the first uses of a 'creeping barrage' employed in close support of infantry maneuvers at Verdun. The French, under General Nivelle, employed this highly effective technique when they launched their counter-offensive to regain many of the lost positions toward the last month of the battle. Under this technique, the French infantry advanced at a carefully prescribed rate of 100 yards every 4 minutes. This allowed them to stay within 75-150 yards behind the 'creeping barrage' to neutralize the deadly Fires of the German infantrymen and machine gunners who would normally wait for a tell-tale lifting of the barrage before setting up firing positions to engage the massive infantry formations that were sure to attack. This technique requires precision fire planning and effective synchronization of maneuver forces that is very difficult to execute even with today's advanced communication systems. The creeping barrage allowed the French to drive the Germans back to roughly the initial start point where the battle first started. Advances in munitions technology that have vastly increased both the burst radius and fragmentary effectiveness of munitions have made this technique much riskier to execute, but the principle is still very effective.

The key lesson learned from the 'creeping barrage' at Verdun is a lesson in adaptability. Leaders must be willing to learn and continue to adapt to the changing situation by modifying their techniques, tactics and procedures (TTPs) to overcome the challenges facing them. Leaders of Verdun faced the horrors of massed infantry formations being decimated by machine gun positions emplaced in well fortified trenches across 'No Man's Land,' so they adapted the 'creeping barrage' to overcome that obstacle. The Germans, who learned their lessons the hard way at Verdun, also modified their TTPs to adapt to the new threat. When the French sought to emulate their success at Verdun by re-applying the creeping barrage in the Chemin des Dames campaign of 1917, their massive barrages fell on empty trenches. The Germans, however, learned their lessons well. They adopted a flexible defense in depth whereby they abandoned their front line positions and withdrew to secondary positions further to the rear, where their intact machine guns and ready defenders exerted horrendous casualties on the attacking French. The massive casualties suffered by the French at Chemin des Dames ultimately led to the total collapse of morale and widespread mutinies within the French army. Leaders of today must continue to learn from their mistakes and adapt to overcome new challenges.

Field artillerymen today could easily identify with many of the field artillerymen of a century past. The Battle of Verdun represented an era where the concept of indirect artillery Fires was essentially experimental. The principle of the five requirements for accurate predicted Fires was still in its infancy and continuously being experimented and constantly refined. This concept was perfected to a science by the end of the First World War.

Field artillerymen at Verdun had yet to achieve the expertise required to execute the firing of multiple rounds to simultaneously impact that allows today's army to mass overwhelming firepower with fewer artillery assets. Field artillerymen of Verdun did not benefit from the leap in technology that produced the revolution in military affairs that benefited later generations of artillerymen.

Technological advances such as laser ranger finders, position locating systems, precision guided munitions, sophisticated meteorological systems, automatic fire control, and advanced fire direction systems were beyond the wildest imagination of any World War I field artilleryman.

These early pioneers did not fight with the Advanced Field Artillery Tactical Data System (AFATDS) or Excalibur satellite guided rounds, yet their revolution in ideas initiated even greater changes, in a span of four years, than our revolution in technology. They fought with the tools available, using their knowledge, training, and ingenuity to accomplish their mission.

During Fires Squadron, 2nd

Cavalry Regiment's recent staff ride to Verdun we were introduced to one of these prominent pioneers of modern Field Artillery, George Bruchmüller, the German artillery commander on the Western front during the later period of World War I. It was evident that what set Bruchmüller apart from his peers was he constantly focused his efforts solely on achieving effects and developed creative ways to meet his commander's intent, rather than blindly following the letters of their orders. For instance, in order to achieve first round effects on target he took great pains to pre-register his artillery in rear areas where their registration could not be observed by the enemy.

Additionally, Bruchmüller sought to tailor the effects of his Fires by predesignating different munitions for enemy formations. For example, he would fire persistent chemical munitions at enemy artillery to prevent them from utilizing their artillery throughout an attack. He also used long range artillery to disrupt their movements of rear area resources, while focusing his heavy caliber howitzers on enemy defensive positions, while simultaneously moving supporting pieces forward to exploit gains with the infantry. All of these artillery units' Fires were controlled with extensive target list worksheets telling the exact times to begin firing, intensify, and cease firing in order to maximize effects while minimizing ammunition expenditures.

Bruchmüller's fellow commanders, who only understood the doctrinal uses of artillery for which they had been trained, believed primarily in the destructive use of Fires of the highest caliber, focused in the Jominian style, and on a single point. The goal was designed to rip a hole in the enemy positions which the infantry could then exploit. He advocated neutralization over destruction saying, "we desired only to break the morale of the enemy, pin him to his position, and then overcome him with an overwhelming assault." Bruchmüller, who had not especially distinguished himself before the war, would go on to serve as the German artillery chief on the Western front.

Besides a very fascinating story of artillery's development throughout the First World War, what can we take away from this example? The first is that when war occurs, technological changes move extremely rapidly, and that doctrine and training will have to be replaced very quickly. Secondly, in order to adapt to change, leaders must be prepared to change their outlook and learn quickly from initial mistakes. Artillery officers must be able to rapidly identify the needs of maneuver forces, not only based on doctrine, but also through immediate after-action review and tailor their forces to meet the ground commander's intent, not necessarily his direct orders. In any future combined arms conflicts, the ability to accurately assess the changing situation and the adaptability to creatively utilize the resources at our disposal, will mean the difference

Leaders with 2nd Cavalry Regiment, Fires Squadron visit the Montfaucon Monument, Lorriane, France, to study the Meuse-Argonne Campaign. (Photo courtesy of CPT Vinh Q. Bui, U. S. Army)

between success or failure. The ability to rapidly discern a problem set and adapt to challenges can only be developed through an extensive training of the mind. Only by honing our ability to think critically, through academic pursuits, broadening our perspectives, and through the study of how those before us have solved similar situations, can we be prepared for the next conflict. In the words of former Chairman, Joint Chiefs of Staff (2005-2007), GEN Peter Pace:

"Devote time to think, read, and write. Intellectual breadth and perspective lead to solutions. We cannot gain their benefit if we are unable to periodically detach ourselves from the day to day tasks that are a necessary part of our duties. Each of us must regularly carve out time to look beyond the present."

What better way is there to train ourselves to think critically, engage in an academic pursuit, broaden our perspective, and see examples of how others have solved artillery problems than through a battlefield staff ride? While there are many opportunities for academic development throughout an officer's career, they tend to be focused primarily at the beginning, the commissioning source, entry level training, and at higher staff positions.

There is relatively little opportunity at the battery and battalion levels for group academic development. The ability to take a few days away from the office and study a historical situation and its significance is a great way to force the function of knocking off the cobwebs of reading and writing critically. At the same time, such an activity broadens perspective both by putting us into the perspective of someone else in another time and forcing us to consider the rationale behind their decision-making process, as well as providing an opportunity to physically visit new locations and learn about cultures.

Fires Squadron, 2nd Cavalry Regiment's recent battlefield staff ride to Verdun succeeded in doing exactly that. Prior to the staff ride, battery-level leadership was tasked with researching and understanding various elements of the historical scenario, which encouraged study and research, as well as writing. We were challenged during the staff ride, while walking along the wonderfully preserved site, to place ourselves in the minds of the commanders that faced unbelievable challenges. Our staff ride historian, MG (Ret.) David T. Zabieki provided his perspective, as both a Field Artillery officer and a published historian, on the development of artillery in World War I. He made us consider the origins of our branch's development, as well as the universal problem set applying indirect fire presents.

"Devote time to think, read, and write. Intellectual breadth and perspective lead to solutions. We cannot gain their benefit if we are unable to periodically detach ourselves from the day to day tasks that are a necessary part of our duties. Each of us must regularly carve out time to look beyond the present."

-GEN Peter Pace

In addition, something felt inherently right in a number of U.S. officers and NCOs engaging in academic exercise, walking past cafes with book in hand, and respectfully interacting with the French population. Many of the stereotypes people have of our Army are challenged by the image of our leaders studying. In an era when Europeans continue to view Americans as narrow minded and naïve of historical precedent, it is good for us to be seen engaged in analytical study of the past.

For commanders seeking to refocus their units at the end of a reset period, there is little better way to get subordinates focused on the future than by showing them the historical lessons of the past, and by demonstrating that the future may require just as much from them.

Although doctrine is a codification of belief, it is a useless concept if its principles are not effectively utilized. An important aspect of our Army in transition is to understand that in addition to 'going back to basics' and executing operations 'by-the-book,' we must prepare our minds for the inevitable task of tailoring doctrinal principles to a future paradigm shift. The best way to prepare for this is to actively study, consider our own and other's decision-making processes discriminatingly, and to consider the historical problem sets of our own branch.

Captain Vinh Q. Bui is from the Bronx, N.Y. He was commissioned a Field Artillery officer earning a Bachelor Degree of Science in Business Administration from the University of Vermont in May 2007. Upon graduation from Field Artillery Officer Basic Course, he was assigned to Fires Squadron, 2nd Cavalry Regiment based in Vilseck, Germany. He has served as a troop fire support officer, squadron logistic officer, senior advisor to the Afghan National Police Training Center in Zabul province, Afghanistan, and assistant operations officer. He has deployed to Iraq in 2008 and Afghanistan 2010-2011 while assigned to the regiment. Bui is currently assigned to Charlie Battery, 1st battalion, 30th Field Artillery Regiment.

First Lieutenant Thaddeus Fox is from Ellington, Connecticut. He was a 2009 Graduate of the United States Military Academy at West Point and holds a bachelor's in Military History. He is currently assigned as a platoon leader/executive officer for Bulldog Battery, Fires Squadron, 2nd Cavalry Regiment in Vilseck, Germany. In May 2010, he deployed for 12 months to Spin Boldak district, Kandahar province, Afghanistan. While deployed he served as the fire support officer/mortar platoon leader/ troop intelligence support leader for M/4/2 CR; a Strykerized cavalry reconnaissance unit.

International Air and Missile Defense Center

A Forum to Foster the Transfer of Knowledge and Multinational Cooperation

By 1LT Christopher Easley

In the arena of air and missile defense operations, the focus can easily center on fire-unit level activities. It is imperative, however, given current world threats, that strategic theater procedures be implemented to achieve victory. The International Air and Missile Defense Center (IAMDC) plays a vital role in modern air defense operations.

Exercises conducted at the IAMDC serve to successfully develop and integrate strategic theater air and missile defense with multinational force operations. The knowledge shared between participating countries will foster trust and build relationships crucial to the continued success of both a joint and combined forces air defense design.

The IAMDC is a state of the art compound built to facilitate joint air and missile defense training for various military and government agencies throughout the Middle East. It is a place powered by cutting edge technology that produces highly realistic and accurate simulations aimed at developing and testing various methods of air and missile defense.

The training that is accomplished in such a versatile facility is invaluable. An infinite number of scenarios can be developed, planned, and executed covering all aspects of regional air defense design to include: logistical support, flight simulations, and battle space management.

Participants can also troubleshoot issues that arise from multinational forces accomplishing a single mission. One of the key functions of the IAMDC is to bring together both combined and joint forces to develop operational procedures that can be used to effectively protect participating nations and agencies in the Persian Gulf region.

A highly intensive and effective training exercise was recently completed at the IAMDC. This training exercise was a three week event that brought together air and missile defense leaders from multiple cooperating nations in the region.

Its purpose was to develop a theater air defense design through academic instruction, joint operational planning, and intensive battle management procedures that stressed reporting, threat acquisition, and de-confliction procedures.

The event culminated in a three day war-game, utilizing the jointly developed defense plan and analyzing positive and negative effects of that design. The purpose was to develop a working strategic theater air and missile defense design model for participating forces to employ. Once standardized, this model can be used to facilitate an immediate and coordinated reaction to a real world threat.

By utilizing all the IAMDC has to offer, all participating forces in the Persian Gulf region can better prepare for the various threats that may arise in the future. The scenarios exercised there accurately stress the importance and viability of a strong air and missile defense design.

More importantly, the continued practice of joint, multinational force cooperation will ensure the success and stability of the region. The IAMDC is an invaluable resource that, if an opportunity arises, every air defender should utilize. It will prove to be an experience not soon forgotten.

Editor's Note: For additonal information about the International Air and Missile Defense Center, please contact CPT Stefanie Joyce, Public Affairs Officer, 318-434-8234.

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Prevent, Shape, Win:

Employing Fires in support of offensive, defensive and stability tasks to Meet the Army's Strategic Imperatives for Joint Force 2020

By MAJ L. Lance Boothe

This paper discusses the concepts for employing Fires in support of offensive, defensive and stability tasks to meet the Army's strategic imperatives of Prevent, Shape, and Win.

Future operational environment and adversary. The future threat environment will focus on regional militaries/paramilitary forces, local interests, and ideologies. Unable to directly challenge the U.S., they will attempt to act either below the threshold of U.S. intervention or in such a way that any gain from intervention would not be worth the risk.

Should that fail, they will attempt to deter intervention by making deployment and force build up as difficult as possible through sophisticated information campaigns, diplomatic persuasion/coercion, and use of proxies to protract operations by avoiding decisive engagements, operate among the people, employ calculated localized overmatch capabilities, and conduct cyber and electronic attack against U.S. capabilities.

Adversaries will also invest in technologies that improve the precision of existing munitions and systems. They will increase the use of unmanned aerial systems (UAS), counter-precision technologies, and electronic attack capabilities.

Assessment. The ability of Army Fires to integrate and operate with joint, interagency, intergovernmental, and multinational (JIIM) partners from tactical to strategic levels, is essential to delivering timely and effective offensive Fires to preempt enemy actions ,and defensive Fires to protect friendly forces, population centers, and critical infrastructure. Fires in support of offensive, defensive and stability tasks comprise all joint and Army Fires. These Fires are employed in support of unified land operations (offense, defense, stability).

Lessons learned, feedback from the operational force, and assessments from multiple experimental venues indicate that Fires in support of offensive, defensive, and stability tasks require improved indirect Fires, air and missile defense, electronic attack, and joint Fires integration. The current maneuver force often operates without fire support because confidence has eroded in the planning and clearing of Army Fires; therefore, commanders rely on tactical air support.

Lessons learned, feedback from the field, and experimentation assessments reveal that:

- Employing Fires in support of offensive, defensive and stability tasks requires rapid coordination and clearance
- Fires Soldiers perform limited integration functions for supported commanders
- Fires Soldiers do not have the requisite access to JIIM capabilities through network-enabled battle command systems to efficiently facilitate coordination, integration, synchronization, and authorization to employ joint Fires
- Fires forces lack a real-time common operating picture
- Air defense airspace management-brigade aviation element (ADAM-BAE) cells have limited active component 2 (AC2) capability, lacking the ability to manage airspace below the coordinating altitude within the brigade comabt team (BCT) area of operations (AO)
- Fires brigades (FiBs) are dependent on non-organic sensors to provide operational Fires.

In addition, operations in Afghanistan and Iraq reveal Army Fires challenges in:

- Mission command integration

- Communications with JIIM partners
- Support for decentralized operations over extended distances
- Task organization
- Access to joint capabilities
- Authorization to employ joint Fires
- Proficiency in employing precision Fires

Training. Due to the past nine years of counterinsurgency (COIN) operations, divisions and corps have focused on resourcing BCTs for the current fight at the expense of training their staffs and subordinate units for major combat operations (MCO), resulting in the loss of proficiency in integrating and synchronizing Army and joint Fires at the speed and scale required. Divisions and corps conduct insufficient training focused on JIIM integration and the delivery of Fires. Security operations over wide areas required many Fires forces to perform non-standard missions (i.e. maneuver, MSR security), which have atrophied the tactical (fire planning and execution) and technical (gunnery) Fires skills of leaders and units. Many Fires Soldiers have not conducted Fires tasks in a decade.

Quality courses for Fires integration into air-ground operations exist for both tactical and operational-level Fires, but are under utilized because of the high operations tempo. Current joint air and missile defense training is immature and does not adequately prepare defensive Fires Soldiers for integrated joint operations. battlefield coordination detachment (BCD), ground liaison detachment (GLD), and reconnaissance liaison detachment (RLD) personnel are undertrained, and these units are low in fill priority. The Army's current approach is to take mid-grade officers and noncommissioned officers (NCO) from the operational force with tactical Fires experience and assign them to corps/theater Fires cells, BCDs, GLDs or RLDs; then expect them to excel at planning and executing joint Fires at the operational level. BCDs must become more proficient in the 'art' of liaison with air operation centers (AOCs) to build inter-service trust and confidence.

The challenge remains to rapidly clear and gain authorization to employ Army Fires in support of offensive, defensive and stability tasks capabilities on the ground, within and across boundaries, and through airspace controlled/used by joint forces and civil aviation.

This lack of timeliness in clearing and gaining authorization to employ offensive Fires has created an over reliance on close air support (CAS) by tactical commanders--despite the menu of precision, near precision, and area Army Fires available to them. Air defense trends at combat training centers (CTCs) with regard to the ADAM-BAE have noted a lack of understanding by junior officers and senior NCOs in basic planning and mission execution expertise to accomplish defensive Fires missions.

Organizing. Fiscal constraints and modularity have driven the Army to make reductions in its Fires forces. Fires forces compose only eight percent of the total Army force. Within the current munitions inventory, area munitions comprise 98 percent. Historically, area Fires were massed to achieve desired effects and this required a large number of howitzers or rocket launchers. So now the Army finds itself with a preponderance of area munitions in its inventory and less weapons systems to deliver them.

Organic heavy brigade combat team (HBCT) and infantry brigade combat team (IBCT) Fires battalions changed from a 3x6 design to 2x8. Echelon above brigade howitzer battalions were redesigned as 3x4. Those cannon reductions, combined with a 37 percent loss in rocket/missile capability, resulted in a one third reduction in FA.

Ammunition haul capacity (equipment and personnel) within FA units is down from three days to two days unit basic load (UBL). Force caps resulted in divisions and corps no longer having organic force Field Artillery headquarters (FFA HQ) and division/corps/theater Fires cells are inadequately manned to perform assigned missions. Active component FiBs no longer have organic howitzer battalions; therefore, the preponderance of howitzer battalions must come from the Army National Guard (ARNG).

ADA units are not organic to division or BCT formations. ADA units at echelons above division are not organized or adequately resourced to support division or BCT operations. As a result, divisions have limited air and missile defense (AMD) engagement capability. Terminal High-Altitude Area Defense (THAAD) batteries were reduced and Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) batteries were not resourced in the Total Army Analysis (TAA) 14-18. The current number of programmed IFPC battalions (2 AC) provide insufficient capability to support the forces and meet Army Force Generation (ARFORGEN) demands.

Equipping. Army Fires are operationally adaptable, versatile, agile, expeditionary, sustainable, interoperable, and scalable; but most importantly, provide commanders, at all levels, with 24/7 all weather Fires capability at a fraction of the cost of other joint Fires. But many next generation Army Fires systems planned after modularity -- Non-Line of Sight-Launch System-Cannon (NLOS-LS), Medium Extended Air Defense System (MEADS), and Surface Launched Advanced

SHAPING FIRES FOR 2020

FIRES IN SUPPORT OF AMERICA'S FORCE OF DECISIVE ACTION

FIRES SEMINAR

MAY 14-18, 2012
FORT SILL AND CAMERON UNIVERSITY
LAWTON, OKLAHOMA

AGENDA

May 14 — Travel, Registration

May 15,16 — Shaping Fires for 2020, Keynote Speakers, and Panel Discussions:

- *Fires Leaders in the Army of 2020*
  - *Speaker: GEN Robert Cone*
- *Fires in Support of Offensive, Defensive, and Stability Tasks*
  - *Speaker: MG Gary Cheek*
  - *Panel: LTG Richard Formica*
- *Fires in Decisive Action*
  - *Speaker: MG Heidi Brown*
  - *Panel: MG Thomas Vandal*
- *Fires Leader Development*
  - *Panel: BG Brian McKiernan*
  - *COL(P) Daniel Karbler*
- *Additional Distinguished Speakers*
  - *GEN(Ret.) John Abizaid*
  - *GEN James Mattis*

May 17, 18 — Field Artillery Conference
Air Defense Artillery Conference
Battlefield Coordination Detachment Breakout

For more information and how to register, visit
https://www.us.army.mil/suite/page/fires

Medium Range Air to Air Missile (SLAMRAAM) -- have been cancelled, and JLENS has been curtailed. Existing systems, such as Patriot and Paladin (M109A6), require modernization due to their age. Patriot and THAAD missiles are in limited supply.

Fires problem. Army Fires capabilities, in 2020, need to train, organize and equip to employ Fires in support of offensive, defensive and stability tasks supporting of unified land operations.

Central idea. Fires in support of offensive, defensive and stability tasks, capabilities provide the Army of 2020 with a versatile mix of organizations and systems at the strategic, operational, and tactical levels to prevent conflict, shape the environment, and win in war.

Prevent

A credible force with sufficient capacity, readiness, and modernization. The Chief of Staff of the Army, GEN Raymond T. Odierno, stated in a blog posted in the Small Wars Journal, dated Dec. 12, 2011, "our Army must prevent conflict. Prevention requires a credible force with sufficient capacity, readiness and modernization."

Sufficient capacity. The Army increases its capacity to generate FiBs by aligning one FiB per AC division to serve as an FFA HQ, enhancing Fires training oversight. FiBs are standardized with one AC rocket battalion (organic), one reserve component (RC) rocket battalion (assigned), and one RC or AC cannon battalion (assigned). FiB capabilities are employed with their aligned division to develop fully integrating Fires capabilities into operations and leverage JIIM assets. FiBs become true 'Fires' organizations through combining offensive and defensive capabilities and personnel.

Assigning indirect fire protection capability (IFPC)-Avenger battalions to FiBs provides defensive Fires for Counter-Rocket, Artillery, and Mortar (C-RAM) systems with residual UAS defense, and counter-air capability to divisional forces. FiBs contain a mix of 13 and 14 series Soldiers (e.g. a FiB deputy commanding officer (DCO) could be a former IFPC battalion commander). FiB commanders recommend the task organization of combined Fires in support of offensive, defensive and stability tasks, capabilities to division commanders.

Fires operational enablers at the theater, joint task force, and corps level include the Army Air and Missile Defense Command, ADA brigade HQ and BCD, and provide sufficient Fires,in support of offensive, defensive and stability tasks, mission command capacity. BCDs migrate into a theater joint Fires command organization to synchronize air interdiction (IA) with ground operations, monitor air tasking order (ATO) execution, manage coordination measures, deconflict the use of airspace in the ACO, and execute time sensitive target (TST) joint firepower. Uncommitted FiBs augment theater, corps, and JTF, Fires capabilities when operational or strategic Fires are required.

Readiness. Combine ADAM-BAE cells with BCT Fires cells to create an air-ground integration cell (AGIC). Through the AGIC, the BCT is provided C-RAM sense and warn capabilities. Placing Sentinel radars in BCTs provide a tool for the AGIC to manage airspace, allowing BCTs to produce a local air picture. The Sentinel, combined with U.S. Army and Air Force air traffic control systems manned with the appropriate controllers, makes the ADAM-BAE an active participant in AC2.

The ADAM-BAE, as part of the AGIC, manages ACMs (procedural controls), and provides positive control of airspace users within BCT airspace to facilitate efficient and effective Fires in support of offensive, defensive and stability tasks that are responsive to the tactical commander. The AGIC is certified by the Fires battalion commander, and every BCT Fires cell/AGIC has an officer with a space additional skill identifier (ASI).

The best way to improve offensive Fires proficiency is to place fire support personnel back in BCT Fires battalions for training and readiness. This reorganization increases access to and control of joint Fires by improving training and providing more specialized precision Fires oriented Fires Soldiers.

The Precision Fires Functional Course, as part of the Army Precision Fires Program (and Mobile Training Team), provides Fires personnel weaponeering, Precision Strike Suite Special Operations Forces (PSS-SOF), and collateral damage estimation training and certification.

Forward deployed defensive Fires forces in Korea, Japan, Germany, and Southwest Asia protect multinational partners. Fires forces lead regional and global deterrence missions against potential missile attacks from Iran and North Korea.

It is important to note that the mission statements of these units are twofold: "…to deter air and missile attack, and if deterrence fails, defeat…". Defensive Fires "capabilities to deny an aggressor the prospect of achieving his objectives" complement the offensive Fires "capability to impose unacceptable costs on the aggressor" in a direct application of Fires toward meeting this strategy.

Modernization. Fires modernization focuses on improving current capabilities. Accelerated Precision Mortar Initiative

(APMI) provides the most responsive precision Fires capability through 120 mm mortars; the M982 precision 155 mm cannon projectile (Excalibur) is more cost effective than a JDAM or cruise missile, providing comparable precision with better responsiveness; the M31A1 guided unitary rocket (GMLRS-U) provides an all-weather point target attack capability with the lowest resupply burden in the U.S. inventory when compared to other joint Fires capabilities that are affected by weather; the Precision Guidance Kit (PGK) increases existing 155 mm high explosive (HE) munitions efficiency, resulting in the fewest number of rounds required to achieve the desired effect on the target.

Upgrades to the Stinger missile program increases its lethality, particularly against UAS; and the Patriot (PAC-3) missile segment enhancement (MSE) increases range, lethality, and mobility. Other improvements to Patriot enhance capability against the evolving threat and enhance operational availability. Platform commonality within maneuver forces reduces maintenance support and logistical footprint (i.e., Q-53/Sentinel, PIM/Bradley, pure fleet FiBs). Development of a precision handheld targeting capability for dismounted observers provides a target location error (TLE) of less than 10 meters out to 2.5 kilometers. It also allows forward observers to conduct target mensuration using PSS-SOF on FOS, or limited scope mensuration using a Pocket Forward Entry Device (PFED) to employ Army and joint precision Fires. Institutionalization of the C-RAM capability provides both sense and warn and limited intercept capability. Fielding of THAAD will enhance ballistic missile defense. AIAMD provides common mission command across defensive Fires and enhances operational flexibility.

Shape

Building partners' capacity by military-to-military exchanges and procurements. Odierno stated that "our Army must help shape the international environment… by engaging with our partners, fostering mutual understanding through military-to-military contacts, and helping partners build the capacity to defend themselves."

Military-to-military exchanges. Fires forces support the combatant commanders' theater security cooperation plans and the national security strategy. With 46 percent of defensive Fires forces forward deployed to assure multinational partners of U.S. support, Fires forces engage with multinational partners to foster mutual understanding and build defense capacity.

Army Fires must increase its long-standing tradition of exchanging both Soldiers and instructors with allied nations, so that our multinational partners' Fires capabilities are developed and compatible with U.S. capabilities. In cooperation with host nation forces, Fires leaders must assess the threats to the host nation, the current state of partner capabilities, and their constraints and limitations. Fires leaders assist in developing and executing plans to improve host nation Fires in support of offensive, defensive and stability tasks, capabilities commensurate with multinational partner, host nation, and U.S. goals. Army Fires Soldiers and leaders must be capable of training foreign militaries. Fires personnel are assigned to advise and assist brigades.

Training multinational partners occurs with individual trainers or training teams embedded with indigenous forces, multinational or Army training teams, and small to large scale multinational training exercises. Where host-nation forces are in the lead, Fires tasks may be accomplished by, with and through host-nation forces. This is also true for situations where Army Fires forces are conducting security force assistance simultaneously with offensive, defensive, and other stability operations.

Procurements. Most foreign militaries cannot afford large numbers of manned combat aircraft, so they invest in FA and ADA systems to offset this capability gap. Foreign military sales enable partner nations to possess their own Fires capabilities, promote the interoperability essential to deliver multinational Fires in coalition operations, and decrease partner nation reliance on U.S. capabilities. The ultimate goal is for the partner nation to provide its own Fires in support of offensive, defensive and stability tasks. If the partner nation does not have Fires capabilities, Army Fires forces must provide Fires in support of offensive, defensive and stability tasks for both US and host nation forces until partner capabilities develop.

Win

Being ready to win decisively and dominantly. Odierno stated "the[Army] must be ready to win decisively and dominantly."

The Fires community must return to lethality as its principle responsibility. Many reports from WWII through the Gulf War indicate that firepower and maneuver are the fundamental elements of combat. The application of firepower precedes successful maneuver to permit infantry and armor forces to take objectives without serious loss of life or injury.

(Reports from the General Board, U.S. Forces, European

Theater, Subj: Study of Field Artillery Operations, pg. 22, 87, 95-6, 106-7; Subj: Ammunition Supply for Field Artillery, pg. 46-7. Artillery Fires were essential to shaping the battlefield for successful maneuver. Tens of thousands of tons of artillery munitions were fired on enemy positions. Army and Marine Corps forces got to the point where they would not maneuver unless sustained artillery Fires were placed on the objective, or used to shape the battlefield. The hard lesson learned was simple: firepower provides freedom of maneuver in combat. The lives of U.S. Soldiers are saved by rolling over and through dead or incapacitated combatants made that way by cannon and rocket Fires, rather than directly engaging live and functioning combatants with rifles, machine guns, and tanks.

Create a Fires strategy focused on providing the Army with versatile, operationally adaptable Fires Soldiers and systems, training them to be competent and capable of coordinating and synchronizing joint, Army, and multinational Fires in support of offensive, defensive and stability tasks in unified land operations to achieve desired effects at the right time and place in any operational environment from ground to space.

To do this, Army Fires must match a wide range of targets with the right sensor and munitions. Fires forces adapt to meet operational requirements. Fires forces operate across the spectrum of conflict to employ joint, Army, and multinational Fires in the deep, close, and security fight (JP 3-0).

The aptitude, experience, and training of Fires Soldiers and leaders enable them to adapt to the fluid nature of operations in all environments from the high end of the spectrum of conflict to the low end.

Fires fundamentals are:

- Targeting
- Gunnery
- Movement and Maneuver
- Integration (Communicate)

Define Fires core competencies as fire support and air and missile defense. These are the unique capabilities that Army Fires bring to unified land operations. Fire support is defined as Fires that directly support land, maritime, amphibious, and special operations forces to engage enemy forces, combat formations, and facilities in pursuit of tactical and operational objectives (JP 3-09).

Four basic tasks of fire support are:

- Provide Fires to forces-in-contact
- Support the commander's battle plan
- Synchronize Fires
- Sustain Fires operations

Air and missile defense is defined as defensive measures designed to destroy attacking enemy aircraft or missiles [and RAM] in the atmosphere, or to nullify or reduce the effectiveness of such attack (FM 3-01). Air and missile defense significantly contributes to both assured access and the prevention of area denial. The four basic tasks of air and missile defense are: defeat air, missile, and RAM threats; provide situational awareness and understanding; provide early warning of aerial attacks; and collaboratively support management of the airspace.

Basic principles govern all military actions. These are the principles of war (objective, offense, mass, maneuver, economy of force, unity of command, security, surprise, simplicity), and they bear directly on employing Fires in support of offensive, defensive and stability tasks across the spectrum of conflict in all operations. The development of unified land operations as Army doctrine does not pose revolutionary challenges to fire support and air and missile defense.

Army Fires in offensive, defensive, and stability operations remain governed by the principles of war; therefore, future Army Fires forces require the following capabilities:

- Rapid, accurate mission command capabilities that optimize system effectiveness
- Collaboratively plan, prepare, execute, assess, and integrate with Army and JIIM capabilities to provide Fires at all echelons
- Determine weapon and sensor locations under all operational conditions to integrate acquisition and fire control systems to deliver Fires in support of offensive, defensive and stability tasks
- Rapidly clear, authorize, and employ joint, Army, and multinational Fires on the ground, in the air, space, and within the electromagnetic spectrum
- Disrupt, degrade, or destroy targets detected and tracked by Army and JIIM integrated sensors
- Systems with rapid emplacement and displacement capabilities to provide effective Fires in support of offensive, defensive and stability tasks
- Weapons, sensors, mission command, and support platforms with the same mobility, survivability, and protection as the supported force to conduct effective Fires in support of offensive, defensive and stability tasks
- Conduct integrated defensive operations that can disrupt, degrade, destroy, or deter the full threat spectrum by augmenting organic self defense capabilities with Army and JIIM capabilities
- A common operating picture provided by Army and JIIM sensors to enhance situational understanding of the air, ground, space, and electromagnetic domains
- Determine the effects of the environment (terrain and weather) on sensors, weapons, and munitions to deliver Fires in support of offensive, defensive

Soldiers with Charlie Battery, 1st Battalion, 321st Field Artillery Regiment fire from their forward operating base. (Photo courtesy of COL Gene Meredith)

and stability tasks
- Rapidly conduct engagement assessments to preserve munitions and facilitate re-engagements

The Army and Fires forces must operate by the following final absolute rules (FARs):

- Always take organic Fires to the fight (never have Fires in reserve)
- Plan Fires for all operations
- Operate within the range of Fires in support of offensive, defensive and stability tasks
- Do not rely solely on joint Fires
- Always reinforce organic Fires and establish Fires in depth
- Always organize Fires forces for combat to:
  -Adequately support committed units
  -Weigh the main attack and/or effort
  -Immediately influence action
  -Facilitate future operations
  -Maximize feasible control
- Meet requirements for accurate predicted Fires

APMI, PGK, Excalibur, and GMLRS-U provide a menu of near precision and precision offensive Army Fires capabilities to tactical commanders.

Employ composite Fires battalions (3x6—two M119A3, 105 mm, light, towed howitzer batteries and one M777A3, 155 mm, medium, towed howitzer battery) in the IBCT. Composite Fires battalions are organized to adapt to a variety of diverse mission sets within combined arms maneuver and wide area security, providing IBCT commanders organic precision cannon capabilities and increased range with the M777A3 howitzer. They aslo provide tactical flexibility through the mobility of the lightweight, air transportable, M119A2 howitzer.

Although composite Fires battalions are designed to operate with three firing batteries comprised of two platoons with three howitzers, they can task organize to operate in gun pairs, of either a mix of 105 mm and 155 mm howitzers, or same caliber gun pairs.

This type of task organization allows offensive Fires capabilities to be subdivided into smaller more agile formations that support maneuver forces in decentralized operations dispersed over wide areas, so that all maneuver occurs under an arc of fire. (Doughty, Robert A., The Evolution of U.S. Army Tactical Doctrine, 1946-1974 (Fort Leavenworth: Combat Studies Institute, U.S. Army Command and General Staff College, 1979), pg. 36-8.

Most tactical commanders concluded that the chief lesson learned from battles in Vietnam in 1965-66 was the importance of firepower. U.S. ground forces were vulnerable without fire support; therefore, many commanders reluctantly operated beyond the range of artillery and without tactical air support. They refused to fight on equal terms with the enemy, because to do so cost lives for minimal (and in many cases reversible) tactical gains with no strategic consequence.

Also, task organizing into small, more agile Fires units as part of a modular initial entry force facilitates strategic and tactical mobility in gaining and maintaining operational access into contested theaters.

The Air Support Operations Center (ASOC) enabling concept, whereby ASOCs are moved from the corps level and aligned with all active Army divisions, is the driving force behind JAGIC. Aligning ASOCs with divisions provide increased capability to execute close air support (CAS), dynamic targeting, and fosters direct links from the Army division to the joint force air component commander (JFACC) for air interdiction and joint intelligence support.

JAGIC combines ASOC personnel and functions with existing Army Fires, airspace, AMD, aviation and intelligence operations personnel and functions to form a cell capable of executing collaborative, near real-time joint Fires/airspace operations. JAGIC implementation requires little cost to the Army, since it takes existing personnel and systems and geographically relocates them to a centralized cell. The current draft of FM 3-94 (*Echelons above Brigade*) highlights JAGIC TTPs.

Army Fires, while supporting the conventional force, have forged new support relationships with the unconventional force providing them with Fires in support of offensive, defensive and stability tasks, and precision strike coordinated through the expansion of Fires experts throughout the SOF community.

Army Fires in 2020 needs to train, organize, and equip to meet the Army's strategic imperatives to prevent conflict, shape the environment, and win in war.

Fires capabilities must provide the Army of 2020 with a versatile mix of organizations and systems at the strategic, operational, and tactical levels in support of unified land operations.

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JOINT MUILTINATIONAL READINESS CENTER: DELTA 30 HOWITZER TRAINING PROGRAM

By SFC Paul I. Fluharty and SFC Scott F. Thrasher

A measure of success for units deployed to Afghanistan is an increase in the capability of Afghan National Security Forces (ANSF) to operate independently and provide for the security of their country. The JMRC assists in this by facilitating mission rehearsal exercises (MRE) for Soldiers deploying as part of the International Security and Assistance Force (ISAF). Soldiers perform the mission essential tasks to ensure they are able to maneuver within the operating environment (OE), but they are also taught to act as mentors and advisers to ANSF. JMRC replicates the OE with civilian and ANSF role players, who live in small population centers and are subject to the lethal and non-lethal operations of opposing forces and the training unit. Because of the active nature of operations, it is a challenge to replicate such a dynamic environment.

In November 2010, the Joint Multinational Training Center received three Delta-30 howitzers from Croatia. JMRC's commitment to partnering with NATO countries aided in this procurement. JMRC fire support team (*Team Vampires*) received a task to design a training program on the system in order to train operational mentor liaison teams (OMLT) prior to deploying to Afghanistan. Since then, JMRC has been able to fully prepare Soldiers for their deployment by providing a seven-day period of instruction (POI) on digital fire direction procedures, manual fire direction procedures, occupation, and employment of the D-30 122 mm howitzer used by the Afghan National Army. JMRC is the only U.S. training center providing this type of training to coalition forces prior to deploying to Afghanistan.

Purpose of training. In recent years, NATO has been given the mission to train the Afghanistan artillery units to assume the duties of providing indirect Fires for maneuver forces in Afghanistan. Many OMLT's who were tasked with this mission had never seen a D-30 prior to arriving in country. A second trend we have seen at JMRC is countries with the Delta-30 in their nation's army that have not used them in over a decade. Much like the United States Army Artillery Corps, most of their soldiers are being utilized to conduct maneuver missions in combat in lieu of their fire support role. The D-30 training program at JMRC not only teaches the basic fundamentals of putting the howitzer into action, but

Two French soldiers work with a U.S. Soldier in the fire direction center where they prepare missions for the howitzer teams. U. S. Soldiers and French army soldiers conducted Operational Mentor and Liaison Team training on the Soviet-era D-30 howitzer in preparation to train the Afghan National Army on the weapon system. (Photo by SGT Joel Salgado, U.S. Army)

(Above left) U.S.and French soldiers stand by their gun waiting for their next fire mission while conducting Operational Mentor and Liaison Team training on the Soviet era D-30 howitzer. (Above right) A French soldier works with a U.S. Observer Controller Trainer setting up sighting systems for the D-30 howitzers. A French soldier checks the sights on the D-30 howitzer before giving the order to fire. (Right) U.S. Soldiers and French army soldiers conducted Operational Mentor and Liaison Team training on the Soviet era D-30 howitzer in preparation to train the Afghan National Army on the weapon system. (Photos by SGT Joel Salgado, U.S. Army)

also provides an opportunity to mentor other Soldiers to conduct mission processing, while providing the most realistic training when it comes to mentoring Afghanistan Field Artillery units.

Seven-day training program.

The first two days of training the mentor receives at JMRC are geared toward learning the Delta-30 system. During this time period they strictly receive blocks of instruction from the *Vampire* observer controller team. These blocks of instruction cover basic operational procedures, emplacement, and using the Delta-30 firing optics. Every OMLT receives training on both the 6,000 mil and 6,400 mil aiming circles as the ANA Kandaks in Afghanistan begin to transition from 6,000 to 6,400 mil firing computations.

Day three: fire direction center. Broken down into two sessions, day three covers the fire direction center (FDC). The first session covers the Afghan Field Artillery Computer (A-FAC). The A-FAC is a Microsoft based system that uses a simple interface and logarithms written in English and Dari. These can be used to quickly and accurately compute firing data for the D-30. This particular feature makes it very easy for OMLT's to oversee what their ANA counterparts are doing while computing firing data. Additionally, the A-FAC allows the user to select 6,000 mil or 6,400 mil firing computations.

The system is accurate due to its ability to account for some of the non-standard conditions. It applies corrections due to air pressure, air temperature, wind speed and direction, propellant temperatures, projectile weight variation, and muzzle velocity variations of each howitzer. The only down side to the corrections the system applies is its inability to accept the standard 10-lines of MET. All corrections are taken from ground level only.

Additionally, the A-FAC computes firing solutions for the 122 mm high explosive (HE) (full) and HE (reduced) artillery shells only. The ANA must compute data for non-standard ammunition manually. The A-FAC system also stores 10,000 target locations, which can be fired when needed, as well as 10,000 observer locations. The system computes data for all three of the primary methods of target location; grid, polar, and shift from known point. The biggest down fall of this system is it only computes firing data from the center of firing battery, which limits its accuracy as howitzers are dispersed from center of battery. The A-FAC system does not come equipped with graphics or maps,forcing the user to manually conduct clearance of Fires and battlefield tracking.

Although it has its limitations, this digital processing system enables the ANA to compute indirect firing data without defaulting to the direct fire mode we so often observe.

Manual fire direction. The second session of day three includes the newest addition of the D-30 training at JMRC; manual fire direction. In late 2011, as Afghan artillery units relied on manual computations, JMRC adjusted its POI to better prepare the OMLTs. A-FACs was not being fielded as rapidly as expected. To mitigate this fielding problem, the task remained the same; enable the ANA to fire artillery using any method possible. Through months of trial and error, along with information from the OE in Afghanistan, SSG James Curry and SFC Paul Fluharty were able to develop a concept and block of instruction to teach all mentors manual fire FDC procedures prior to deployment.

The manual FDC is taught in a six-hour window on day three, during which the OMLT must display the technical ability to compute all firing data manually. This includes, but is not limited to, firing polar missions, making adjustments on subsequent missions, and determining a quadrant manually. OMLTs also participate in a practical exercise where they must compute firing data on both the A-FAC and manually; all firing data must be within the tolerance. This practical exercise proves to be vital in boosting the confidence of the OMLT prior to training their ANA replicators the following day.

Days four and five. Probably the most challenging and difficult, the OMLT's receive their host nation security forces (HNSF) on days four and five, and must train them on the task covered the previous three days of instruction. Most OMLTs have a two day window in order to accomplish this mission, while facing many realistic and difficult tasks. The first thing most OMLTs have difficulty with is the language barrier between the HNSF and themselves. Next they realize their HNSF are not very technically and tactically sound when it comes to employing the Delta-30. Many OMLTs who have attended this training have stated this is the most beneficial part because they learn how they will task-organize their team after arriving in Afghanistan in order to accomplish their mission.

Days six and seven. The OMLT must prepare and execute a fire support plan, in support of a culminating exercise (Culmex) for the ANA Kandak. During this time the FDC receives actual fire missions from the observer controller (O/C) conducting a situational-training exercise. The data is then processed and sent to the howitzers. Fire missions are marked by a fire marker and casualties are accessed by the O/C with the maneuver element.

This training brings together all the hard work conducted by the OMLT, providing the opportunity to evaluate their fire mission processing, and gaining an idea of how they look overall prior to deployment to Afghanistan. The entire fire support team, from observer to firing unit, is tied together here at the end. Overall the D-30 training program has come a long way since it originally stood up in November 2010; however, the instructors continue to improve it and still face some challenges.

Challenges for the program. The biggest challenge for the future of this program is the lack of maintenance support for the Delta-30s. Since the howitzers were leased from the Croatian army, the personal at JMRC do not have the resources to properly maintain the howitzers. Although not a significant issue at this point, it could potentially become a larger issue the more the howitzers are used. Additionally, staying current with what is being taught to Afghan artillerymen has been difficult at times. The instructors get constant feedback from the OMLT after they deploy to try and mirror the training program at JMRC with what is being taught in Afghanistan at the NATO Training Mission-Afghanistan (NTM-A).

Overall, this training program provides much more pros then cons: the ability to prepare every OMLT on this weapons system prior to deploying has proven to be a vital tool to ensure the mission readiness of all OMLTs training the Afghanistan army on indirect fire support. To date, JMRC has trained more than 300 OMLTs on the D-30 prior to deployment, and have received much appreciation from those trained for the assistance in preparing them for their mission.

Sergeant First Class Paul Fluharty enlisted into the Army on July 14, 2000, and successfully completed 13B10, One-Station Unit Training at Fort Sill, Okla., in October 2000. Upon completion of his basic training and Advanced Individual Training he was assigned to Bravo Battery, 2nd Battalion, 15th Field Artillery at Fort Drum, N.Y. Fluharty spent 10 months with B/2-15 FA, where he deployed to the United States Military Academy at West Point, to train and mentor the Army cadets on Field Artillery tasks. He was soon reassigned to Alpha Battery, 3rd battalion, 6th Field Artillery as a Gunner in a M119 howitzer section. Shortly after his arrival to A/3-6 FA, SFC Fluharty deployed with his unit in support of Operation Joint Guardian - KFOR. From July 2003 to May 2004, Fluharty served as a howitzer section chief during combat operations at Forward Operating Base Shkin, Afghanistan. He was then assigned to Alpha Battery, 4th Battalion, 25th Field Artillery in August 2004, and deployed as the gunnery sergeant to Operation Enduring Freedom VII, Afghanistan. In addition to his regular duties, Fluharty volunteered and personally trained 80 Soldiers in the Afghan National Army on maneuver tasks. SFC Fluharty deployed to Afghanistan for the third time in December 2009. He is a member of the prestigious Sergeant Audie Murphy Club and has held every position as a 13B from cannoneer to platoon sergeant. He is currently serving as an observer/controller-trainer with the Vampire Fire Support Team at JMRC, Hohenfels, Germany.

Sergeant First Class Scott F. Thrasher joined the United States Army in February of 1991, where he served on active duty until June of 1996. After a break in service, he reentered the Army and attended Basic Training and Advanced Individual Training as a 13B Cannon Crew member at Fort Sill, Okla., in September of 2003. Thrasher's OCONUS assignments include Camp Casey, Korea, where he served as a howitzer driver for Bravo Battery, 1st Battalion, 15th Field Artillery, and Hohenfels, Germany, with the Joint Multinational Readiness Center as an observer controller trainer. Thrasher's CONUS assignments include Bravo Battery, 4th Battalion, 41st Field Artillery at Fort Benning, Ga., and was deployed to Camp Doha, Kuwait, in support of Operation Intrinsic Action with 1st Battalion, 17th Field Artillery Regiment.

Afghan National Army Certifies Artillery Battery for Paktika Operations

MAJ Joseph P. Buccino, TF Blackhawk PAO

GARDEZ PROVINCE, Afghanistan – The D-30 artillery battery of 4/2/203 ANA was certified for real-world operations in Paktika province by the MOD following a successful battery-level live fire March 13, 2012.

During the one-day exercise the eight-gun battery fired 96 high explosive rounds and 41 smoke rounds and will now relocate to Orgun, eastern Paktika province, to integrate lethal indirect Fires into CF and ANSF operations along the Pakistani border.

Capt. Dawood Shah Han, commander of the artillery battery, explained the live fire certification process. "We fired 137 rounds in 16 fire missions," Han explained. "With a five kilometre range, we were accurate within 100 meters with the first round every time."

Brigadier General Zmaray Khan, commander of the 2nd brigade, 203rd Corps ANA in Paktika province was excited about the practical application of the battery in eastern Paktika. "Previously, we did not have indirect fire support from the Afghan side in Paktika," Khan explained. "Our D-30 artillery is all we need to defeat the insurgents once the Americans leave. With accurate artillery, we will never lose an engagement."

Staff Sergeant Afwhan Attaullah, first gun chief, explained the battery's proficiency. "We understand deflection, quadrant elevation, and how to make adjustments after the first round," Attaullah said. "When we get back to Paktika, we will have four guns available to shoot all the time and our fire direction center will always be available."

Staff Sergeant Ahmed Alimzai, second gun chief, spoke optimistically about the battery's future. "We will fire on the insurgents with pleasure," Alimzai explained. "This spring, the enemies of Afghanistan will find that they cannot cause problems in Paktika province because of our artillery."

An Afghan National Army Soldier, from the 4th kandak, 2nd brigade, 203rd Corps, adjusts the sights of his D30 howitzer during a live-fire certification March 13. (Photo by MAJ Joseph P. Buccino, U.S. Army)

The Future of Warfare:

Impact of Space Operations

By LTC Robert E. Berg

Tomorrow's War – Detection and Attribution

War has changed and continues to change over time. This is not to say that we throw out the old and forget the lessons of the past. Many principles remain the same and can be applied to new forms of warfare. What each warrior and leader tries to anticipate is what the next war will be like. With such knowledge, or anticipation of what is next, leaders can shape and plan for success in the next conflict.

Some of the 'next' war is already taking place. As nations enter the world stage through expanded economic and diplomatic ties abroad, they inexorably link their success with the world community. The leading nations of the world are tied in globally. Major economies succeed, in large part, due to global ties.

How do these nations come into conflict with each other?

Outright conventional warfare has a greater effect today in the damage caused to the economies of warring parties; cost of supporting war is high; cost of rebuilding our modern infrastructure, or theirs, is high. Losses are also due to the obvious and the more subtle economic interlinking between the warring parties. Adverse international opinion and diplomacy effects are additional impacts to consider.

What is actually happening?

The leading nations of the world have been avoiding direct conventional conflict with each other. This follows the old mutually assured destruction concept from the Cold War. Large nations are adverse to the negative impact of conventional warfare with a peer nation. The global economy has put larger chips on the table. Additionally, the incentive for a nation to gain territory through warfare no longer exists as the global community maintains a static view of national territories.

I mentioned, we do not forget the lessons from the past. The Cold War had elements that are being seen today. When outright nation-on-nation conflict has potential for escalating to the unthinkable, other less-powerful means are sought to prosecute the desired effects. Aiding another nation in conflict with your enemy is one means; espionage is another. Whenever a method is available where the actor can remain hidden, an advantage is achieved in being able to act with impunity. A favorite statement of mine is the old Soviet Union "categorically denying" involvement in some event or crisis. We see something similar today with a fight being waged in the cyber domain.

We, the United States, have been under daily attack. These attacks may be security breaches in order to test defenses. They may be for purposes of gathering restricted information. They may at times seek to cause disruption, damage and degradation of systems. The attacks are occurring in the cyber domain. Cyber domain aggressors have a great advantage; they can be difficult to identify. Even when cyber aggressors can be identified, their association with a nation, group or industry can be difficult to attribute.

There is simple attribution and there is a higher level of attribution. Simple attribution is basic knowledge of connections and likelihood that certain governing parties are responsible.

Is the actor linked to commercial industry, a government or an independent group?

Simple attribution possibly can be used in efforts to counterattack and counterstrike via similar means. Higher-level attribution is where the connection can be used on the world diplomatic stage.

Is there evidence the suspected group, to whom the actor is linked, is the responsible party?

Higher-level attribution is needed in order to take effective diplomatic action. For this reason, difficulty of attribution, cyber warfare is occurring as a preferred method of conflict between large players on the global stage.

Smaller players are also using the cyber domain to have an impact on the battlefield. Sometimes the existing global network is used as a means of difficult-to-detect communication and coordination. Smaller players also

have reasons to avoid conventional warfare and remain hidden. The U. S. military is too strong to stand up to on a conventional basis. Like cyber warfare, small actors use other methods that are difficult to attribute.

"Actors too weak or too cautious to threaten NATO with overt conventional attack may employ jagged methods of assertion. This category of deferrable risk involves an unpredictable variety of pressures, constraints and challenges, sometimes anonymous, unattributable, uncertain or disputed..."

-Paul Schulte,
Strategic Insights, Volume VIII, Issue 4.

In Iraq and Afghanistan, we have seen a common theme in the conflicts. Those who fight against us attempt to remain hidden. The individual who places an improvised explosive device (IED) attempts to engage us without exposure or identification. Those who aid the individual emplacing an IED do so with hidden networks of support. The IED is an anonymous weapon. Our difficulty in prosecuting such a fight is identification and attribution of those we are fighting against.

Large nations also have become more ethical in prosecuting a war. Collateral damage and civilian casualties have become of greater consequence. Even individual incidents, not resulting in physical harm, such as what took place in Abu Ghraib, have international impact. We can no longer bomb an entire city to take care of a problem. We cannot employ negative means against a populace.

- We must seek to target the individuals directly responsible.
- We must locate an enemy who is difficult to find.
- We must be able to attribute actions against us to those individuals we target.

The small player has something in common with the larger players in conflicts we are engaged in around the world. In both cases, they have reasons to use means that are anonymous and difficult to attribute. The IED is one such means. Other means include cyber warfare and disruption of space-based intelligence, surveillance, reconnaissance and communications.

Other means of the future are likely to follow this theme of being difficult to detect and attribute. If we apply this thought to direct kinetic engagement, it is likely to be based on robotics. Already many nations have embraced unmanned aerial vehicles and are working toward ground-and water-based unmanned vehicles as well.

As such technology becomes prevalent, it will become easier to use and more affordable for smaller players to use on a large scale. More importantly, as technology used in unmanned vehicles gains greater commercial availability, it will become more difficult to attribute. Physical stealth of unmanned systems and stealth in attribution have the potential to transform physical warfare methods and can be linked to nontraditional methods such as cyber warfare.

Both cyber warfare and insurgent use of IEDs depend upon difficulty in locating the actor and attributing those actions to a controlling cell or entity. Unattributable robotics is a natural progression for both. The prevalence of unmanned vehicles is likely to enable future warfare using unattributable robotics.

Unmanned vehicles are leading in development of the technology necessary for this next step in progressive use of robotics. The large actor gains 'plausible deniability,' and the small actor remains difficult to locate. Some of these systems are being seen in development around the world such as power-line creeping robots, snake robots, and others in addition to the now common UAV. Robotics, like cyber warfare, is another way the fight of the future can be waged in a difficult-to-attribute method.

What does all this mean for the military?

For one thing, there are many players other than the military. Corporate organizations, state-run intelligence offices, political groups and others are in the cyber fight and will be able to step into other methods of fighting their battles while remaining hidden.

Traditionally, militaries fight militaries or guerilla forces or insurgents. Now warfare is taking place on new battlefields with new objectives (yet linked to traditional goals).

If a cyber attack targets a commercial corporation, does the corporation fight back or does a military force?

There is likely a need for greater cooperation between the military, the commercial world, and the political and economic arms of the government as warfare progresses to operating primarily in new territories.

"A U.S. military response to espionage or crime would be a strange departure from international norms regarding the use of force. A retaliatory cyber attack (where the intention is to damage or to destroy, rather than exploit) or retaliation using a kinetic weapon for a cyber attack against countries that have not used force against us or against individuals with criminal rather than political aims,

"We ought to live with things in advance, explained as a prefiguring of what is to happen."
-Posidenius,135-51B.C.

could easily be interpreted as an aggressive and unwarranted act by the international community. The result is to cast doubt on the credibility of a retaliatory threat, weakening any deterrent effect."

-James A. Lewis, Cross-Domain Deterrence and Credible Threats, July 2010.

What are the primary keys in this 'fight of the future' that we have begun to engage?

Detection, location, and attribution are fundamental requirements that enable the fight to take place through targeting and effects. We are good at targeting, and we can create many useful effects. Effects on new battlegrounds such as in cyberspace are being pursued aggressively around the world. The great difficulty remains in detection, location, and attribution of the enemy. Primary keys in detecting, locating, and attributing can be found in cyber warfare methods and in space-based assets. The military has stepped up to the plate in creating a U.S. Cyber Command and standing up service components to that command. Space-based capabilities also continue to be a growth field that is needed as a primary key for tomorrow's war.

Space in tomorrow's war.

Military dependence on space has grown tremendously. The peaceful nations and peoples of the world are also gaining greater dependence on space. Soldiers rely on satellite-based navigation (as does the civilian populace of the modern world). Communications in remote regions are enabled through space-based assets.

Military timing is enabled through space as are financial transactions around the world. Warning of missile threats, with such quickness to allow reaction in the scant time available, is possible through space-based assets. We have many dependencies that have developed on space and for good cause. Space-based assets provide keys in prosecuting the fight of the future.

Military planners are now adverse to any type of collateral damage; precision munitions are a key player in limiting collateral damage. These precision munitions are enabled through space-based assets. The nature of ethical warfare has led in part to a dependence on space for this precision. With a world integrated on a political and economic level, further refinement of what is ethical in warfare is likely to continue. Precision capabilities of weapon systems will likely remain a primary need in future conflicts.

Space enables our military in a way that greatly reduces the requirements for ground and air-based systems, and manpower. We hunt individuals and cells that do not show themselves as a regular, recognizable military. Space-based platforms can cover large areas in identifying, locating, and attributing. Space-based intelligence across the spectrum (such as signal, infrared, visible, radar, and multi-and hyper-spectral imaging) is a critical enabler in hunting the enemy.

We see space providing tipping and cueing in multiple areas. Without the tipping and cueing provided, the search would be intensive and likely often fail to produce timely results. Missile warning, geo-location, joint friendly force tracking, interference identification, space situational awareness--and more are linked to intelligence requirements and situational awareness needs.

Moves are being made toward more automated analysis of space platform data. Analysis by individuals only targets a focused area that has been identified as being of interest.

Data fusion and correlation across multiple areas is time and manpower intensive unless it can be automated. Being without these space and automated capabilities would require massive amounts of ground forces, a larger quantity of airborne platforms, and large numbers of analysts to meet the need.

If we wish to continue to be capable in handling large land area missions with small amounts of forces, the intelligence aspects provided by space and automated analysis will continue to be critical.

What is the future conflict?

We are partly in it. Our conventional forces cannot be matched by our typical opponents. There is a continuing integration of nations economically and politically on a global level. Those who are our peers avoid conventional conflict with the United States, as we do with them. Our enemies, and friendly competitors, resort to non-conventional means.

Identifying and locating our targets (individuals, cells, sources, etc.) has become more difficult. Space has become a key player in target identification that cannot be supplemented without large increases in ground and air-based assets with associated manpower. Precision engagement is ethically critical and enabled by space. We will likely continue to see the same difficulties and need for capabilities of space-based assets in the future.

Across the full spectrum of operations such as major combat operations, humanitarian assistance, countering weapons of mass destruction proliferation, and homeland defense, the same space-based capabilities provide needed intelligence or critical information about the situation. These operations are often likely to involve even fewer forces on the ground or limited ability to use airborne assets, leading to space once again meeting the need.

With the great capability that space provides, enemies will see our space assets as key targets. The dependency on space-based assets also creates a need to provide for the defense of these assets and their capabilities. There are anti-satellite missiles, laser systems, and electromagnetic jamming threats to satellites in orbit. There are capabilities such as GPS jamming that deny a space-based capability in a local terrestrial area. The possible threats are highly varied.

So, what areas should be concentrated upon?

Looking back at the global integration of nations on an economic and political level, nations that have the capability to physically destroy an object in space are likely to avoid such action. Space provides them capabilities, at multiple levels, that would harm their economic well-being if lost. For major nations, low earth orbiting satellites are easy targets. Attacking these targets is similar to the concept of mutually assured nuclear destruction in that we each hold the entire LEO belt hostage. The region is highly crowded with satellites and debris. A few destructive strikes could set off what is known as the Kessler Syndrome, a domino effect of destruction in space caused by a chain reaction of millions of pieces of debris colliding with satellites at velocities faster than the fastest bullets. International repercussions are also likely as the world on a whole depends more and more upon satellite systems. For these reasons, nations are likely to endeavor to use effects that do not cause debris.

Artist's conception of a Global Positioning System (GPS) satellite in orbit. (Illustration courtesy of NASA.)

Such nondestructive effects are being seen today. International news sources last year reported Iranian jamming of BBC and Voice of America satellite broadcasts. The cost to conduct such jamming is minor compared to the high cost of a direct ascent anti-satellite missile or an orbital platform that could cause disruption. Not only are individual unit costs low for ground-based systems that provide temporary and reversible effects, but those systems are also based on known technology with little to no development needed.

An example of how low cost and simple satellite interference from the ground can be is exemplified in an individual case, John R. MacDougall, a.k.a. Captain Midnight, who jammed HBO broadcasts in 1986. These jamming effects are typically nondestructive and reversible, making them less likely to be of concern to the international community. The effects also can be difficult to identify, locate and attribute, creating opportunity for actors to operate with greater impunity. In future conflicts, of both limited and larger scale, we are likely to need strong capabilities to identify, locate and attribute temporary and reversible interference and disruption of our satellite systems.

Our dependence on space has increased greatly as a military, as a nation and as a global community. The capabilities to identify, locate and attribute provided by space are critical in prosecuting future wars. For ethical reasons, we rely on space for precision engagements. Space provides navigation, tracking, communications and warning to the global community and the military.

Conflict in space is likely to follow the methods being used in cyber warfare, in that the actors seek to remain hidden or difficult to positively attribute. Warfare in general is apparently moving in this direction of anonymity. Our nation must assess how these future global conflicts, economically and politically integrated with the world, will be fought. We as space professionals do our part in attempting to foresee how space will play a role.

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Space and Cyberspace: Key Areas of Intersection

By Jac W. Shipp

The pace of change and level of effort has increased dramatically with respect to operations in space and cyberspace, with both of these domains increasingly being influenced by multiple actors with access to the information environment.

What is needed in supporting this trend is up-to-date thinking and dialogue about how the space and cyberspace domains and their operations overlap and intersect, and the synergies and opportunities created by each. Our journey involves the examination of space and cyberspace definitions and analyzes specific aspects to promote understanding of space and cyberspace.

These areas are situational awareness, operations, training and leader development, capabilities development and acquisition. Our focus is on the discovery of ways to prepare our nation's leaders — public and private sector — and on ways to leverage these domains to advance our nation's interests by improving integrated space and cyberspace support to full spectrum operations.

Key Areas of Intersection

- **Space, like cyberspace, is a warfighting domain**
- **Both domains are information-centric and information-enabled**
- **Both space and cyber superiority support information superiority**
- **Both space and cyber operations enhance situational awareness**
- **Space capabilites enable, and may be enabled by the conduct of, cyberspace operations**
- **Space capabilities are employed in the extension of the Army's portion of the GiG-LandWarNet, particularly in support of deployed forces**
- **Space capabilities, particularly space control capabilities, are employed to deliver Cyber Attack and Exploitation payloads to our adversaries, systems and networks**

Key Definitions and Insights

Space and Cyberspace Domains

Joint Publication 3-14 says the space domain is "a medium like the land, sea, and air within which military activities shall be conducted to achieve U.S. national security objectives."

According to a deputy secretary of defense memorandum dated May 2008, the definition of cyberspace domain is a "global domain within the information environment consisting of the interdependent network of information technology infrastructures, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers."

From these definitions we conclude each is a global warfighting domain where distinctive space and cyberspace military activities are conducted. Both generate effects in and through their own domains, and across the other domains (e.g. air, land, and maritime). Both domains are information-centric and information-enabled and both advocate space and cyberspace superiority goals in support of domain and information superiority. These domains share networked systems and associated physical infrastructures. The primary objective for each is to ensure friendly freedom of action and as necessary deny adversary freedom of action, suggesting common elements for strategy development.

Space and cyberspace are the newcomers to the realm of warfighting domains, and as such have yet to be fully understood, exploited and integrated into military operations. Their respective operational architectures reflect considerable interdependencies, that is, an effect in one domain can have immediate and far reaching consequences in the other. The interconnected and highly technical nature of space and cyberspace has led to specialized training and career force approaches which

have resulted in limited leader awareness, slow progress in space and cyberspace planning, and a less than desired level of joint and Army integration.

A summary insight is that the space and cyberspace domains demonstrate more similarities than any other domains, offering many opportunities for cooperative and synergistic efforts. This article will explore a few of those opportunities.

Space and cyberspace operations

Joint Publication 3-14 goes on to say, ***"Space operations are comprised of the following mission areas: space force enhancement, space support, space control, and space force application."***

In a 2009 update to the deputy secretary of defense memorandum, the approved definition of cyberspace operations include the "employment of cyberspace capabilities where the primary purpose is to achieve objectives in and through cyberspace. Such operations include computer network operations and activities to operate and defend the Global Information Grid."

Both space and cyberspace operations require, and simultaneously enhance situational awareness; the speed of space and cyberspace activities demands timely and precise situational awareness.

The operational framework and concept of operations for space and cyberspace are amazingly similar. Both rely on specialized intelligence and data fusion to enable a level of situational awareness that supports timely operational decisions and action.

Each is heavily dependent on global connectivity, a support component (e.g., satellite operations for space, and forensics for cyber), and active and passive defensive measures. And both space and cyberspace operations depend on an offensive operations arm (space control and NetWar) to deny adversary freedom of action as required. Space capabilities enable, and may also be enabled by the conduct of, cyberspace operations.

Likewise, cyberspace operations enable space operations and are clearly enabled by space capabilities. Many space capabilities are employed in the extension of the Army's portion of the GiG-LandWarNet, particularly in support of deployed forces; an example is the dissemination of mission warning data initiated at space-based infrared sensors and disseminated via theater broadcast means and the Joint Tactical Ground Station Platforms.

Space capabilities can be employed to facilitate cyberspace attack and exploitation data from systems, networks and device level activity. space platforms and their attending links and ground systems are used to communicate friendly cyberspace information both to defend and maintain situational awareness of those systems and networks. Cyberspace operations may also be employed to enhance the Army's ability to dominate space through the delivery of cyberspace capabilities to adversary space platforms and their supporting networks.

These similarities in the framework and conduct of space and cyberspace operations suggest synergies and efficiencies that can be achieved in developing, employing and integrating space and cyberspace capabilities and operations.

Intersect and overlap

It then becomes relevant to explore whether the space and cyberspace domains and their associated operations intersect or overlap.

'To intersect' -- "inter-between secure to cut -to divide something in two by passing through or lying across."

'An overlap' -- "a partial superposition, or coincidence."

As we examine the discreet components of each domain and operation, we see that both occupy discreet and distinct points in time and place. A router in space facilitating the flow of data across the Internet, GIG, or LandWarNet is overlapping the space platform hosting its payload. The data passing through the router is intersecting the space platform for a brief period of time.

The employment of offensive space capabilities to support the delivery of offensive cyberspace tools creates an operational intersection. Both terms, then, seem equally applicable in different and distinct ways.

Insights into areas of space and cyberspace convergence

While there are many areas of convergence in planning, coordinating and executing space and cyberspace activities across both the operational and institutional Army, four specific areas are highlighted here: situational awareness, operations, training and leader development, and capability acquisition. Each has far reaching implications across Doctrine Organization Training Materiel Leadership Personnel Facilities in terms of efficiencies by leveraging commonalities that exist between space and cyberspace.

Within situational awareness we see the potential for development of a single set of tools, technologies, and techniques that support visualization of the friendly and adversary space and cyberspace situation to empower situational understanding and decision-making.

Within space and cyberspace operations there are opportunities for synergy in concept and concept of the operation development, inter-service crosstalk and coordination, and offensive and defensive integration. Within space and cyberspace training and leader development there are opportunities and potential cost savings to be found in identifying who, where, and how that training is conducted, and in how we manage space and cyberspace professionals.

Finally, within capability acquisition synergy may be created between space and cyberspace in how we incentivize the private sector to participate, and how we develop and sustain supply chain security.

Space and cyberspace situational awareness

The U.S. Army Capstone Concept (December 2009) states, "a fundamental capability is establishing early and sustained situational awareness through all intelligence disciplines to enhance operations, planning and execution."

Situational awareness (SA) is derived from detailed intelligence, understanding of the operational environment and friendly and adversary activities and capabilities. Both space and cyberspace situational awareness are essential for accomplishing space and cyberspace related tasks and operations as well as supporting operational situational awareness, understanding, and decision making. And both achieve SA through the collection, reporting, analysis and assessment of a set of common components (e.g., surveillance of space and cyberspace, intelligence, and environment) that contribute information to achieve SA. The key area of intersection between space and cyberspace SA is represented by the tools-technologies-techniques employed to support visualization of the situation to the commander.

Currently, we would argue no space and cyberspace visualization capabilities have been effectively integrated into the commanders' common operating picture (COP). Nascent tools have certainly been developed that portray aspects of SA in both the space and cyberspace domains; but nothing has appeared on the horizon that encompasses both domains—or points of intersection between the domains—or the key aspects of SA discussed above to be effectively integrated into existing COPs. The ideal setup would also allow for a degree of interoperability with our joint, interagency, intergovernmental and multinational partners. Given the high degree of similarity and numerous points of intersection between the space and cyberspace domains, the development of a single visualization capability integrating data from each holds promise for more comprehensive understanding, and potentially will save time and money in the process. Combining the efforts of the space and cyberspace communities of interest to identify technical solutions will help identify and account for the inherent interdependencies between these domains and operations. In addition, these synergies are reinforced in an organizational sense as U.S. Strategic Command, and a number of the service components are 'multi-hatting' space and cyberspace commands.

Operations

Three key areas of synergy between space and cyberspace operations are concept and concept of the operation development (CONOP), inter-service crosstalk and coordination and offensive-defensive integration. First, concept and CONOP development. Since the frameworks for space and cyberspace operations are similar, it makes sense that collaborative development of future concepts and CONOPS would result in more complete and integrated concepts and CONOPS. This idea of inter-service warfighter talks suggests the benefits that would be derived from the formal coordination between the services at the major command and at the operational command levels (e.g., Air Force Space Command and Army Space and Missile Defense Command, and 24th Air Force and Army Cyber Command). This concept of Army-Air Force and Army-Navy warfighter activity would showcase and advance the ways the services are approaching the planning and conduct of space and cyberspace operations to benefit utility and unify effort. Finally, the area of offensive and defensive integration is a promising area of collaboration. Both space and cyberspace operations require a level of integration between the defensive and offensive components, and both are characterized by classified and compartmented capabilities and are components of Army special technical operations (STO). It would be useful to

The Warfighter Information Network-Tactical equipment is set up during the Network Integration Evaluation 12.1 exercise at White Sands Missile Range, N.M. (Photo By LTC Deanna Bague, U.S. Army)

collaboratively develop novel approaches to offensive and defensive integration and integrated STO in support of land campaigns.

Space and cyberspace training, leader development, and career field management

Space and cyberspace operations are hardware, software, and technical centric and require a significant level of commercial sector integration and coordination. Both involve considerable employment of communications and intelligence capabilities and related infrastructure considerations. Identifying the precise areas of intersection in the curricula, who provides this instruction, and what facilities and resources support this training and education for our military professionals is another potential cost saving and efficiency area of synergy. This education should be examined beyond the bounds of the Army, looking across the other services as well as training with academia and industry. We can admit that both space and cyberspace operations are poorly understood by the warfighter. An examination of how we present these topics to our present and future leaders throughout the professional military education process may lead to a more holistic program of instruction that informs both areas work, and how they work together to effectively support full spectrum operations. A third potential area of synergy that should be explored is how we manage space and cyberspace professionals and subject matter experts. The Army space professional cadre has been evolving over the last decade, and there are surely lessons that could be applied to the development and management of an Army cyberspace career field. Key questions need to be addressed. Does the warfighter need a general knowledge of space and cyberspace operations, or does he simply need to know where and to whom to reach for advice and assistance in the integration of these areas? What about training with industry, and how we can better understand and leverage commercial capabilities, ideas and processes?

Space and cyberspace capability acquisition

It's no surprise that both space and cyberspace capabilities continue to push the research and development communities to the very edge of what is technologically possible, and both communities struggle with rapidly developing and effectively integrating capabilities for operational users. This continues to strain existing military acquisition processes which have principally been designed to produce hundreds or thousands of major end-items that come with a parts and logistic support cycle spanning years, or even decades. These processes are not well adapted to build a single space platform, or a specialized cyberspace capability. Both space and cyberspace operations require an acquisition process that favors speed and agility. The Army does not need to develop this process or capabilities alone. The tremendous strength inherent in effectively managing public-private partnerships is an area not yet fully exploited. Before this partnership can become de rigueur there are a few hurdles to surmount. Some of these include determining how we incentivize the private sector to participate; how we protect the intellectual property of private sector/academia while rapidly ingesting capabilities that are developed in support of validated requirements; how we address the many security and clearance issues to get the requirement to the widest possible audience; and how we ensure capabilities developed through this process are interoperable with existing capabilities. Another shared concern to address in space and cyberspace capability acquisition is supply chain security. We must conduct technologically informed risk management and identify those capabilities and platforms within which we cannot afford the inherent risk associated with foreign-designed and manufactured components, and those for which we have a greater degree of flexibility in their country of origin and build or acquire accordingly. Certainly there will be economies in the implementation of a single supply chain management process for both space and cyberspace capabilities rather than independent processes for each area.

Recommendations

Given the incidents of intersection and overlap between the space and cyberspace domains, and their associated platforms, capabilities, and operations we have outlined a few areas where leveraging cross-domain synergy can realize cost, effort, and resource savings. So what's next? The key players in this kind of synergy must include U.S. Army Cyber Command, U.S. Army Space and Missile Defense Command/Army Forces Strategic Command on the operational side, and their associated offices of space and cyber proponency, as well as the key elements within our institutional Army, notably the Mission Command Center of Excellence. Only through close and continuous coordination across these elements and organizations --from the early concept and architecture work--through the various battle labs and centers of excellence, to the final fielding and employment of these capabilities can we hope to capitalize on these potential synergies and efficiencies for the good of our Soldiers and our Army.

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Mr. Shipp retired from U.S. Special Operations Command in 2009, and currently works as a cyberspace operations subject matter expert. He has been planning, leading and supporting the conduct of cyberspace operations for more than 10 years, and has been involved in the development of Army cyberspace concepts, training and leader development, advised senior military leadership on the integration of cyberspace operations in full spectrum operations. He briefed cyberspace operations and activities to the vice president of the United States, White House and Congressional staff, director-Central Intelligence Agency, director-National Security Agency, director of National Intelligence, and Army, Air Force, and Navy flag officers.

Fires Photo Contest 2012

Deadline for submissions: Aug. 13, 2012

Our annual photo contest obtains high-quality photos that tell the story of today's U.S. artillery professionals conducting training or engaged in full-spectrum operations. These photos may appear as a cover or other shots for future editions of *Fires Bulletin*, as a part of the Fires Center of Excellence poster series or in other esprit de corps or strategic communications projects. The competition is open to all military or DoD civilian personnel.

First Place Winner 2010

First Place Winner 2011

Photo Categories:

Field Artillery/Air Defense Artillery

- **Actual Combat/Full Spectrum Operations**
- **Training for Combat/Full Spectrum Operations**

Photo Submissions:

-Each submission must include:

1. **Photographer's name**
2. **Unit / Affiliation**
3. **E-mail address**
4. **Mailing address**
5. **Phone number**

-Captions must include:

1. **Who/from which unit**
2. **What is taking place (action)**
3. **Where and When (date and location)**

–Example: "SGT Joe B. Smith, C Battery, 2nd Battalion, 20th Field Artillery, 1st Cavalry Division, Fires the M109A6 Paladin howitzer during unit qualification training at Fort Hood, Texas, Jan. 5, 2012."

NOTE: Winners will be required to provide full social security numbers to receive prize money payment through DFAS. Privacy Act requirements will be observed and enforced.

Prize Winners:

1st thru 3rd place winners will be awarded for each division.

1. 1st place winners will receive $300.

2. 2nd place winners will receive $200.

3. 3rd place winners will receive $100.

Contest Rules:

1. Entries must be received by Aug. 31, 2012.
2. Only photos taken in the last 36 months are eligible for submission.
3. Each photo must be a .jpg or .tif image with little or no compression.
4. Images cannot be manipulated in any way.
5. Photos cannot be copyrighted or owned by any agency or publication.

Judging will take place online. The voting process will be published in future editions of *Fires*, on the *Fires Bulletin* website, *Fires Bulletin* Facebook, Fires Center of Excellence Facebook and on Fires Knowledge Network.

Photos can be sent by e-mail or by postal service on CD.

NOTE: CD's will not be returned.

E-mail image file (one image per e-mail) to:

Fires.bulletin@us.army.mil or
paul.e.jiron.civ@mail.mil

Notate subject line-

"2012 Photo Contest/Entry Category – your last name."

1. Mail CD's to ATTN: Photo Contest, P.O. Box 33311, Fort Sill, Okla. 73503.

2. FedEx or UPS submissions to 652 Hamilton Road, Room 203, Fort Sill, Okla. 73503.

NOTE: Submissions (even those not selected for prizes) may be used at the discretion of the Fires Bulletin and Fires Center of Excellence STRATCOM staff. Questions? Contact the Fires Bulletin staff by e-mail at Fires.bulletin@us.army.mil or to paul.e.jiron.civ@mail.mil, or by phone at DSN 639-5121 or commercial at 580-442-5121.

Fires in Decisive Action: Developing Capabilities Required to Win the 'Next Fight'

By MAJ D.J. Hurt

An era of complex, protracted conflict has challenged our Army to more thoroughly understand the operating environment, better frame the problems, and develop innovative means to ensure our commanders have full spectrum dominance on the 'battlefields' of the 21st century. In the last ten years, Fires has proven its ability to provide operationally adaptive Fires in a wide variety of offensive and defensive missions. With the looming competition of resources, the ability to create a leaner and cost-effective solution to the Joint Fires and Army 2020 is important to ensure flexibility for national security decision-makers in defense of the Nation at home and abroad. In view of this resourced constrained environment, the Fires Force must prioritize its specific investments to win the 'next fight.'

Future operational environment (OE) and adversary. The future threat environment will focus on regional militaries/paramilitary forces, local interests, and ideologies. Unable to directly challenge the U.S., they will attempt to act either below the threshold of U.S. intervention or in such a way that any gain from intervention would not be worth the risk. Should that fail, they will attempt to deter intervention by making deployment and force build up as difficult as possible through sophisticated information campaigns; diplomatic persuasion/coercion and use of proxies; protract operations by avoiding decisive engagements, operating among the people; employ calculated localized overmatch capabilities; and conduct cyber and electronic attack against U.S. capabilities and will. Adversaries will invest in technologies that improve the precision of existing munitions and systems. Adversaries will increase the use of unmanned aerial systems (UAS), counter-precision technologies, and electronic attack capabilities.

Assessment. Lessons learned, feedback from the operational force, and assessments from multiple experimental venues indicate that combined arms maneuver and wide area security require improved indirect Fires, air and missile defense, electronic attack, and joint Fires integration. The ability of Army Fires to integrate and operate with joint, interagency, intergovernmental, and multinational (JIIM) partners from tactical to strategic levels is essential to delivering timely and effective offensive Fires to preempt enemy actions and defensive Fires to protect friendly forces, population centers, and critical infrastructure. Employing Fires in support of offensive, defensive and stability tasks, requires rapid coordination and clearance. Fires Soldiers perform limited integration functions for supported commanders.

They do not have the requisite access to JIIM capabilities through network-enabled battle command systems to efficiently facilitate coordination, integration, synchronization, and authorization to employ joint Fires. They lack a common operating picture (COP), allowing them to preempt enemy actions and protect forces and other designated critical assets while preventing fratricide and mitigating collateral damage. Air defense airspace management/brigade aviation element (ADAM-BAE) cells have limited airspace command and control (AC2) capability. ADAM-BAE cells require integrated capabilities to better manage airspace below the coordinating altitude (CA) within the brigade combat team (BCT) area of operation (AO) and increase situational awareness/situational understanding.

Operations in Afghanistan and Iraq reveal challenges in Army Fires mission command integration, communications with JIIM partners, fire support for decentralized operations over extended distances, task organization, access to joint capabilities, and authorization to employ joint Fires. The Fires Capabilities Based Assessment (CBA) identified the following:

Critical capability gaps:

- Fires and ADA brigades, and their subordinate battalions, lack the ability to clear the airspace and gain authorization to employ Fires in JIIM and rules of engagement (ROE) restricted environments, adversely impacting the ability of FA and ADA systems to conduct timely engagements of threat ground and air systems, respectively.

- Maneuver forces lack defense against surveillance UASs. Current ADA systems have limited detection and engagement ranges to preclude threat aerial surveillance of friendly forces and defended assets, leaving forces and assets at risk of attack by ground or aerial systems cued by UAS.
- Fires and ADA brigades, their subordinate battalions, and Fires battalions in BCTs have limited organic beyond-line-of-sight communication capabilities to integrate with Army and JIIM partners across the operational area. This capability affects all force and engagement operations and improves command and control and the timely clearance, authorization and employment of Army, joint and multinational Fires in support of offensive, defensive and stability tasks. The inability to establish and maintain these communications increases the potential of mission failure, fratricide, over-engagement, and collateral damage.
- Dismounted observers lack the ability to rapidly locate ground targets to a target location error less than 10 meters in all conditions without target mensuration, preventing engagement with precision munitions by indirect fire systems. The Fires brigade has no organic capability to accurately locate ground targets in all conditions, preventing engagement with near precision and precision munitions.
- BCTs lack protection against rocket, artillery, and mortar (RAM) attacks when outside fixed installations (e.g., forward operating bases), exposing them to potential losses of personnel and equipment. Current counter-rocket, artillery, mortar (C-RAM) capabilities are positioned to defend such fixed assets and lack mobility to maintain pace with BCT elements.
- Patriot battalions lack sufficient capabilities to protect a support commanders' critical assets against tactical ballistic missiles. Patriot can generally defend only a portion of a supported commander's critical asset list, thus precluding defense of some friendly forces, population centers, and other assets. Combatant commanders' demands for air and missile defense continue to increase while Patriot remains a 'low density' system.

Fires investments. While our force provides the finest Fires support in the world with devastating accuracy, firepower, and a wide range of effects, it has been focused on a predominantly conventional threat.

The current task for the Fires force is to be decisive in combating hybrid threats, while maintaining conventional superiority through a versatile mix of tailorable and networked forces.

As we look to the 21st century and an era of persistent conflict, there are shortfalls that must be overcome to provide commanders a sustained flow of trained and ready forces for full range of military operations and hedge against unexpected contingencies.

Currently, Fires forces are capable of integrating and operating within the Army's combined arms team and JIIM environment, providing organic, 24/7, all weather, Fires in support of offensive, defensive and stability tasks at a reduced cost when compared to other joint and Army capabilities.

Army Fires are more economical than joint Fires while providing comparable precision, better responsiveness and the only organic all weather Fires capability to Army forces.

Army Fires in 2020 will be a combination of Fires in support of offensive, defensive and stability tasks, and capabilities that are employed together through Fires organizations that contain the right mix of Fires in support of offensive, defensive and stability tasks systems and platforms.

Future Army Fires forces will require the following capabilities:

- Provide rapid, accurate mission command capabilities that optimize system effectiveness
- Collaboratively plan, prepare, execute, assess, and integrate with Army and JIIM capabilities to provide Fires at all echelons
- Determine weapon and sensor locations under all operational conditions to integrate acquisition and fire control systems to deliver Fires in support of offensive, defensive and stability tasks
- Rapidly clear, authorize, and employ joint, Army, and multinational Fires on the ground, in the air, space, and within the electromagnetic spectrum
- Disrupt, degrade, or destroy targets detected and tracked by Army and JIIM networked sensors
- Rapidly emplacement and displace capabilities to provide effective Fires in support of offensive, defensive and stability tasks
- Field weapons, sensors, mission command, and support platforms with the same mobility, survivability, and protection as the supported force to conduct effective Fires in support of offensive, defensive and stability tasks
- Conduct integrated defensive operations that can disrupt, degrade, destroy, or deter the full threat spectrum by augmenting maneuver units' organic self-defense capabilities with Army and JIIM capabilities
- Establish common operating picture provided by Army and JIIM sensors to enhance situational understanding of the air, ground, space, and electromagnetic domains
- Determine the effects of the environment (terrain and weather) on sensors, weapons, and munitions to deliver Fires in support of offensive, defensive and stability tasks

Clearance of Airspace

Required capabilities supported.

- Clear, authorize, and employ Army, joint, and multi-national Fires, on the ground and in the airspace
- Command, control, and integrate Army, joint, and multi-national indirect Fires capabilities above the BCT level
- Mass indirect Fires capabilities in time and space on point, area, and distributed targets. Accurately locate ground targets to employ the range of conventional to precision capabilities

Investments. Programmed: The following are programmed investments in for Program Objective Memorandum (POM) 13-17.

- (M) Field Integrated Battlefield Control Systems Army Integrated Air Missile Defense
- (O) Establish force Field Artillery capability at division. (Align 1 Fires brigade headquarters per division)
- (L) Brigade fire support officer training at intermediate level education
- (T/L) ADAM/BAE/Fires cell training

Proposed Investments. The following are proposed investments for POM 14-18.

- (O) Provide a Sentinel radar to every BCT to provide local air picture
- (O) Consolidation of Fire supporters at HHC BCT to standardize training and certification.
- (O) Combing ADAM/BAE and Fires cells to improve airspace clearance procedures
- (M) Continue IBCS fielding to ADA organizations (e.g. AAMCD, ADA BDEs, ADAM Cells)
- (T/L) Army Training Concept/Army Learning Concept/Army Leader Development Strategy – Joint Combined Fires University (blended learning) Implementation (Mitigates risk at all echelons.)
- (T) Joint Integrated Training Environment

UAS Defense

Required capabilities supported.

- Intercept in flight threat rockets, artillery, mortars, ballistic and cruise missiles, manned and unmanned aircraft
- Engage targets detected by organic and non-organic linked sensors
- Classify, identify, and discriminate friendly, neutral, unknown, and hostile aerial objects

Investments. Programmed: The following are programmed investments in for Program Objective Memorandum (POM) 13-17.

- (M) Activate two (2) C-RAM/Avenger Composite battalions
- (M) Field IBCS (AIAMD)
- (M) Field Stinger missile with proximity fuze

Proposed Investments. The following are proposed investments for POM 14-18.

- (O) Create one (1) additional C-RAM/Avenger battalions in the Active Component (Army Force Generation {ARFORGEN} at 1:2)
- (M) Initiate Sentinel upgrades
- (O) Provide a Sentinel radar to every BCT to provide local air picture
- (M) Initiate service life extension program to retain Stinger capability
- (M) Implement Avenger sustainment program to retain maneuverable ground-based air defense capability

Beyond Line of Sight Communication Capability

Required capabilities supported.

- Command, control and integrate Army, joint and multi-national indirect Fires capabilities
- Clear, authorize, and employ Army, joint, and multi-national Fires on the ground and in the airspace
- Mass indirect Fires capabilities in time and space on point, area, and distributed targets. Engage targets detected by organic and non-organic linked sensors

Investments. Programmed: The following are programmed investments in for Program Objective Memorandum (POM) 13-17.

- (M) Initiate MIL-STD 3011C Fielding
- (M) Field IBCS (AIAMD)

Proposed Investments. The following are proposed investments for POM 14-18.

- (O) Enhanced signal (NETOPS) capability at AAMDC/ADA BDE (FDU)
- (M) Field ADA extended range communications (e.g. Tropospheric Radio {Tropo}, secure network access point {SNAP})
- (M) Continue to utilize the Network Integrated Evaluation (NIE) with a focus of:
    - Conducting parallel operational tests of several Army programs, and evaluate capabilities of the current, theater provided and emerging networks
    - Combine test and evaluation and demonstrate the Army's focus to integrate components simultaneously in one operational venue
    - Assess developmental networked and non-networked capabilities
    - Facilitate rapid evaluation of commercial and government network and networked solutions to establish a network baseline from which to rapidly build

Rapidly Locating Ground Targets

Required capabilities supported.

- Accurately locate ground targets to employ the range of conventional to precision capabilities
- Employ Fires with a wide range of conventional to precision capabilities
- Clear, authorize, and employ Army, joint, and multi-national Fires on the ground and in the airspace
- Mass indirect Fires capabilities in time and space on point, area, and distributed targets

Investments. Programmed: The following are programmed investments in for Program Objective Memorandum (POM) 13-17.

- (D) Update Fires Brigade doctrine
- (L)BDE FSO training at ILE (T) Incorporate JFO training into BOLC. Add precision Fires courses in FA School (AIT, BOLC, CCC, ALC, SLC)

Proposed Investments. The following are proposed investments for POM 14-18.

- (M) Precision hand held device with a TLE of less than 10 meters (JETS)
- (M) Field Sensor Fusion software to improve accuracy of radar acquisitions
- (O) Increase target acquisition capability in the Fires brigade/IBCT by adding a second target acquisition platoon with two Q-53s radars, leveraging money spent on Q-37 repair, maintenance, and improvement (RMI)
- (O) Consolidation of Fire supporters at HHC BCT to standardize training and certification
- (M) Precision Guidance Kit (PGK) fielding
- (T/L) Army Training Concept/Army Learning Concept/Army Leader Development Strategy – Joint Combined Fires University (blended learning) implementation
- (T) Joint integrated training environment

C-RAM

Required capabilities supported.

- Intercept in flight threat rockets, artillery, mortars, ballistic and cruise missiles, manned and unmanned aircraft
- Engage targets detected by organic and non-organic linked sensors
- Classify, identify, and discriminate friendly, neutral, unknown, and hostile aerial objects

Investments. Programmed: The following are programmed investments in for Program Objective Memorandum (POM) 13-17.

- (O) Activate two (2) C-RAM/Avenger composite battalions
- (M) Designate C-RAM as program of record
- (M) Field enhanced sensors: EQ-36 (Q-53) and LCMR (Q-50)
- (M) Field RAM Warn (IFPC Inc 1)
- (T/L) ADAM/BAE/Fires Cell Training

Proposed Investments. The following are proposed investments for POM 14-18.

- (O) Create one (1) additional C-RAM/Avenger battalions in the active component (ARFORGEN at 1:2)
- (M) Upgrade Sentinel
- (M) Field indirect fire protection capability (IFPC) Inc 2. AoA is currently being conducted which will result in an enhanced version of the current capability

Critical Assets List

Required capabilities supported.

- Intercept in flight threat rockets, artillery, mortars, ballistic and cruise missiles, manned and unmanned aircraft
- Plan, prepare, execute and assess Army, joint, and multi-national AMD capabilities
- Classify, identify, and discriminate friendly, neutral, unknown, and hostile aerial objects
- Clear, authorize, and employ Army, joint, and multi-national Fires on the ground and in the airspace
- Engage targets detected by organic and non-organic linked sensors

Investments. Programmed: The following are programmed investments in for Program Objective Memorandum (POM) 13-17.

- (O) Activate number x THAAD batteries
- (O) Activate an additional Patriot battalion
- (M) Mobile Subscriber Equipment (MSE) Fielding
- (M) Field IBCS (AIAMD)

Proposed Investments. The following are proposed investments for POM 14-18.

- (M) Patriot modernization/future MSE Fielding (MSE missile is a critical component)

Major D.J. Hurt currently serves in the Integration Cell within the Capabilities Development and Integration Directorate (CDID) at the Fires Center of Excellence. He has deployed in support of Operation Iraqi Freedom. He has a BA in Chemistry and Life Sciences from the United States Military Academy and is currently working on his Masters Degree.

The Brigade Targeting Process in Afghanistan

By MAJ Peter N. Kremzar and CW2 Gabriel Perez

As the role of the 131A, Field Artillery Targeting Technician, continues expanding in targeting within the battalions and brigades all over our Army, we find it imperative to share targeting best practices/lessons learned during combat operations in support of Operation Enduring Freedom X-XI.

As the brigade targeting team led Task Force Rakkasan in Eastern Afghanistan, we each maintained critical roles in the process. The brigade combat team fire support coordinator/Fires and effects coordination cell (BCT FSCOORD/ FECC) chief served as overall responsible authority for the BCT targeting process. He synchronizes lethal and non-lethal targets across the brigade's six lines of effort (security, agriculture, government, development, information operations, and negative influencers) while also ensuring all Fires assets (artillery, mortars, attack aviation and close air support) were synchronized across the BCT battle space.

The brigade targeting officer was responsible for managing the measure of effectiveness, measures of performance, and essential information as they influenced the brigade's lines of effort. He advised the commander and staff on all technical and tactical employment of fire support systems, and provided expertise at forward operating base/command observation posts (FOBs/ COPs) to ensure radars (Q-36/Q-37/LCMRs) were operating optimally. He also maintained the responsibility for collateral damage estimation (CDE) and weapons effects employment procedures, required for attacking deliberate and dynamic targets. He provided the expertise and assisted the BCT FSCOORD in planning and synchronization of targeting efforts. He also managed the BCT targeting process including the negative/ positive influencer program, key leader engagement (KLE) working group, fusion cell, and targeting working groups with combined joint task force 101 (CJTF) and other agencies.

Targeting Best Practices. Throughout our Army careers, we have both observed many different techniques and targeting processes; however, the 3rd BCT executed a comprehensive targeting process that prosecuted deliberate and dynamic/time sensitive targets (TST).

We will not spend a lot of time on the TST side of targeting; but we will tell you it was successful due to the large number of targets either killed or captured, which was due largely to the detailed work of our fusion cell. This cell was not only tied into the brigade intelligence support element (BISE), but also fed back into our deliberate targeting process in terms of our insurgent network priorities and our top-12, high-value individual (HVI) list.

The fusion cell director worked in close coordination with the Fires and effects coordination cell (FECC) chief, BCT targeting officer, task force S2s, special operations forces (SOF) partners and Afghanistan National Security Forces (ANSF). All worked together to ensure targeting was deconflicted, intelligence was shared, and targeting actions were complementary.

Focused intelligence surveillance and reconnaissance (ISR) and named areas of interest (NAI) development. Often faced with limited

SPC Michael Zimmerman, a radar repairman, Headquarters and Headquarters Battery, 3rd Battalion, 6th Field Artillery Regiment, 1st Brigade Combat Team, 10th Mountain Division, performs weekly maintenance on the radar system on Forward Operating Base Kunduz. (Photo by PFC Cynthia S. Teears Van Cleve, U.S. Army)

A Combat Logistics Battalion 4, 1st Marine Logistics Group (Forward), Mine Resistant Ambush Protected vehicle provides security during a combat logistics patrol through Helmand, March 5. The patrol supported counter insurgency operations in the area. (Photo by Cpl. Mark W. Stroud, U.S. Marine Corp)

ISR, the BCT relied on focusing what assets we possessed for NAI development/over-watch along with actionable HVI target development. This list of NAIs was constantly updated and developed through a close monitoring of the current situation and balanced with target development. Incorporating air lift, attack, and a scout weapons team into the ISR plan to cover gaps and areas not accessible at times by ISR due to weather issues, provided immediate fixes to challenges and aggressive and consistent overwatch based on historical insurgent movement routes and attack positions. ISR and aviation was also levied against human intelligence (HUMINT) and signal intelligence (SIGINT) reporting as part of the target development process.

Deliberate targeting process. Our deliberate target process involved a four-week process that was nested across the BCT lines of effort (LOE): security, development, government, agriculture, information operations, and negative influencers. Early in the deployment the BCT utilized a two-week targeting process. This may be a feasible course of action due to the number of targets across all the LOEs that a unit wants to quickly develop and execute, upon their initial arrival into theater.

We discovered after a couple of months we needed to extend to a four-week targeting cycle, allowing time to effectively define the problem, completely develop the target, allocate resources, and incorporate all the LOEs into the concept of the operation (CONOP). It is easy to build a target and rush it into execution, but if the plan is not fully developed or if there are holes, it will be lost, and could be a lingering problem for your replacement.

We conducted our targeting meetings at the same time, every Tuesday and Friday, to keep our battle rhythm in order and provide some predictability to the busy schedule.

Our deliberate process was initiated by the threat brief, updated by our S2, as well as insurgent networks for the staff and the commander. Later during week one, the BCT conducted one of the most essential meetings, the assessment working group, to our process. During this working group, the BCT staff and the task forces assessed previous targeting efforts to determine if the targeting process was achieving the desired effects and if we needed to make refinements. The BCT staff also assessed our security, government and development LOEs by province through the district stability assessment tool (DSAT), which was filled out by the battle space owners and provincial reconstruction teams (PRTs). This tool provided us the information/assessments on which provinces were improving or declining by LOE, and would allow for the BCT staff and civilian agencies to determine where to focus their efforts during the upcoming target cycle.

Finally, during the assessment working group, we determined the way ahead for target nominations, not only from the staff, but from the task force representatives for future development during week two.

The second week of our targeting process was essential, consolidating all of our working groups to capitalize on the expertise of the BCT's different staff sections, as well as the civilians working with us. These civilian elements consisted of: the Department of State (DOS), United States Agency for International Development (USAID), and the Department of Agriculture (USDA). We also had maximum participation from other sections, such as the Human Terrain Team (HTT), the BCT law enforcement professional (LEP) and rule of law. Something we tried to stay away from was to partially develop a bunch of targets and force them onto the task

forces, agribusiness development teams (ADTs) and/or PRTs. We worked toward fully developing a small number of targets each cycle that were approved by the BCT commander with a complete CONOP and nested across the lines of effort. They were synched through the staff sections and civilian agencies to give the executing elements something in which they could achieve the desired results.

We discovered when we placed a staff member or civilian counterpart in charge of a LOE, that LOE was represented during the working groups, the CONOP, and the targeting process.

3rd BCT LOEs:

- Security: BCT S3
- Government: DOS assisted by the BCT S9
- Development: USAID assisted by the BCT S9
- Agriculture: USDA assisted by the BCT S9
- Information Operations (IO): BCT S7/ BCT Targeting Officer
- Negative Influencer: BCT Targeting Officer

The following working groups (WG) existed within 3rd BCT's targeting process: 1) security WG; 2) a combined agriculture, development and government WG; 3) a combined negative influencer and information operations WG; 4) threat finance WG headed by a two-man team for the Afghan threat finance cell to target the financing part of the insurgent network. The critical parts of these WGs were strict attendance and to maintain an agenda/concept of targets that were already discussed at the previous assessment WG. The WGs were where we 'made money' as we stayed away from the briefing slides and worked off the whiteboard. We usually broke up in smaller groups to 'wargame/ brainstorm.' Those groups then briefed the larger group for feedback. The BCT had very strong command emphasis with support from the S3 (who was present for every WG), XO and DCO, as well as all the different staff sections to ensure all warfighting functions and civilian agencies were represented to fully develop the target. The outputs of the WGs were to define the problem, determine resources required, develop the course of action for the concept of the operation and identify the lead officer/NCO/civilian for the target.

During the third week, targets developed from the different working groups were nominated to the deputy commanding officer (DCO) or executive officer (XO) at the BCT target board.

A scaled down version of the target, which included the problem statement, critical factors, mission, end state, LOEs supported, assets required, IO themes, key tasks,

U.S. Marine Corp, Lance Cpl. Alexander Hurley, a motor vehicle operator with Combat Logistics Battalion 4, 1st Marine Logistics Group (Forward), offloads a shipping container of supplies from his Logistical Vehicle System Replacement at Forward Operating Base Pennsylvania, during a combat logistics patrol. (Photo by Cpl. Mark W. Stroud, U.S. Marine Corp)

concept and proposed decision point(s) for the commander, was displayed to the DCO/XO and rest of the staff. The senior officer at the target board would provide guidance to go forward with the target and changes, or continue to develop the target for future target cycles.

Targeting 'week four,' consisted of the decision brief to the BCT commander, in which he was presented the target as it was shown in the target board with decision point(s). The commander was also briefed on any S2 updates to the insurgent network based on targeting effects. The BCT also updated the top 12 HVI targets and the top negative and positive influencers for his approval. At the end of the decision brief, the BCT commander would approve or deny the nominated targets and provide guidance for future target cycles.

Keys to success for our targeting process included:

- Define the problem first
- Civilian/Military Integration (our BCT civilians were integral to the process)
- Attendance (needed all sections to attend and participate). Besides the standard sections include: HTT, LEP, JAG, Rule of Law, ADT, EOD, RCP, Safety Manager, TF LNOs, etc.
- Stay on agenda and stay on target
- During working groups, use white boards and stay away from slides
- Abbreviated target process (if a target of opportunity came up during the cycle, we would conduct an abbreviated WG with key leaders to insert into the target cycle or brief the Commander at a determined time)
- Use Task Force LNOs or integrate available staff officers for the battalions into our WGs

ANSF Targeting.

Most BCT units were conducting some sort of combined action to improve the ANSF capacity to conduct operations. As the targeting team for the brigade, if we could go back and do anything differently, we would establish the targeting process and teach skills earlier in the deployment to help the ANSF to develop their own process and be more effective.

We made great strides over the last couple of months with our ANSF partnered brigade, while setting the conditions for our replacements; however, there is still a long way to go. Over the last few months of the deployment, we worked closely with the Operational Coordination Center-Province (OCC-P) in Khowst province, the Afghanistan anti-terrorism chief, the 203rd Corps, Afghanistan National Army (Paktya), and the Operational Coordination Center-Regional (OCC-R) commander. We also incorporated several key individuals from the commandos, Afghanistan Border Police (ABP) and Afghanistan Uniform Police (AUP).

In this process we found the ANSF elements were tracking many of the same HVIs as we were, but were lacking on targeting development, planning, analysis, and deconfliction aspects of the targets. We focused on these areas over the last few months of our deployment, and we made some headway toward improvement.

We conducted our ANSF targeting meeting bi-weekly and experienced success through assigning NAIs for different ANSF elements, which included HVI targets associated with those NAIs. We would then have them brief their effects and intelligence gathered at follow-on target meetings. In the last month of our deployment, the ANSF began briefing aspects of targeting, such as intelligence updates for different NAIs, target development, and target de-confliction.

Formerly, U.S. forces performed this function, so it appeared as if they were grasping the concept and improving their capacity. We got to the point where we could brief CJTF on not only our top 12 HVIs, but also which HVIs the ANSF forces were focused on, and on the de-confliction of targets. Once again, ANSF targeting is something that needs to have command emphasis, staff participation (S2, S3, fusion cell, FECC, S7 and law enforcement professionals), and must be a part of the BCT battle rhythm or it will fall off the radar because of the operational tempo (OPTEMPO).

Establishing an effective targeting process within a brigade is challenging and takes the participation of all key staff members and civilian agencies to meet the commander's intent and operational campaign plan established in theater. We learned that information sharing between the task forces, at all levels, is paramount for this methodology to work effectively within the different working groups, with de-confliction meetings used to assess current and proposed future targets.

It is clear to us that the BCT staff became stronger with time, and with each war-fighting function and enabler, they better understood the importance of targeting.

Once established and embedded with the BCT battle rhythm, the process continued with great success as 'buy in' and ownership was fostered within the brigade staff.

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Chief Warrant Officer Two Gabriel Perez is the brigade targeting officer in 3rd BCT 101st ABN DIV (AASLT) at Fort Campbell, Ky., and is a graduate of the Warrant officer Basic Course, Fort Sill, Okla. Perez served as a member of the 1st Battalion, 321st Airborne Field Artillery regiment, 18th Fires Brigade (Airborne), where he held the position of howitzer section chief. His previous deployments include a 12-month rotation to Mosul, Iraq, as squad leader in 2005-2006, and a 12-month rotation as brigade targeting officer to Regional Command East, Afghanistan in 2010.

EXPLOSIVE REACTIVE ARMOR VS. IMPROVISED EXPLOSIVE DEVICES

By Howard Kleinberg

In a January 2012 National Defense Magazine article "Buried Bombs Can Be Destroyed, But Not Defeated," leading defense analyst Sandra Erwin describes the current threat of improvised explosive devices (IEDs) to U.S. troops as follows: "The weapons of choice of U.S. enemies, improvised explosive devices, are like deadly viruses that mutate in reaction to vaccines. They cannot be wiped out, only temporarily thwarted… So far the most successful antidote has been heavily armored trucks that can withstand large explosions and protect crews. Because IEDs are easy to build and bury, and tough to find, armor remains the best available countermeasure."

Current counter-IED vehicle designs such as those of mine-resistant ambush-protects (MRAPs) use passive methods for defense; vehicle height to reduce the intensity of the blast by the time it reaches the vehicle's underside; armor plating; and V-shaped hulls. This does not include bomb-detection and disposal technologies with troops, counter-network efforts to find and attack the people making and planting IEDs, and other technologies and tactics to detect and eliminate IEDs before they can have a chance to explode under friendly forces.

"The weapons of choice of U.S. enemies, improvised explosive devices, are like deadly viruses that mutate in reaction to vaccines. They cannot be wiped out, only temporarily thwarted..."

-SANDRA ERWIN, NATIONAL DEFENSE MAGAZINE

However, as Erwin continues, "None of the existing technology, to the chagrin of U.S. commanders has been able to crack the toughest nut of the war on IEDs: bombs made of calcium ammonium nitrate fertilizer. Lacking enough metal content to make them detectable by traditional sensors, these explosives have been the bane of U.S. forces. Soldiers have dubbed these large bombs 'Buffalo killers' because they can destroy a heavily armored Buffalo mine-protected truck." Erwin estimated that the majority of IEDs in Afghanistan are made from ammonium nitrate.

That there are large, undetectable bombs persisting and operating effectively against U.S. and allied Soldiers means that more effective means are needed to protect vehicles, including MRAPs, from larger-IED explosions.

All of the aforementioned counter-IED vehicle design-features are passive. They do nothing to 'hit back' at the IED blast once it begins.

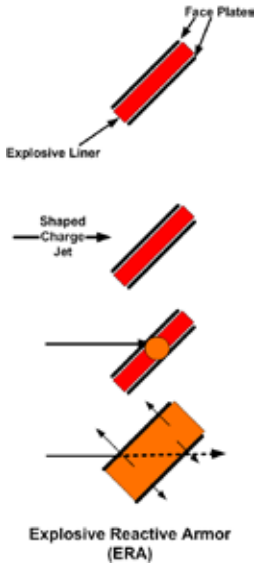
The question is: **what more can we do to protect vehicles and troops from IEDs, and ideally, is there any proven, affordable, off-the-shelf technology with which to do so?** Fortunately, the answer is absolutely yes; 'active' protection technologies for vehicles against explosive weapons already exist, in the form of Explosive Reactive Armor, or ERA.

"Reactive armor is a type of vehicle armor that reacts in some way to the impact of a weapon to reduce the damage done to the vehicle being protected."

An element of explosive reactive armor consists of a sheet or slab of high explosive sandwiched between two plates, typically metal, called the reactive or dynamic elements. On attack by a penetrating weapon, the explosive detonates, forcibly driving the metal plates apart to damage the penetrator. Against a shaped charge, the projected plates disrupt the metallic jet penetrator, effectively providing a greater path-length of material to be penetrated. Against a long rod penetrator, the projected plates serve to deflect and break up the rod.

"The disruption is attributed to two mechanisms. First, the moving plates change the effective velocity and angle of impact of the shaped charge jet, reducing the angle of incidence and increasing the effective jet velocity versus the plate element. Second, since the plates are angled compared to the usual impact direction of shaped charge warheads, as the plates move outwards the impact point on the plate moves over time, requiring the jet to cut through fresh plate material. This second effect significantly increases the effective plate thickness during the impact. To be effective against kinetic energy projectiles, ERA must use much thicker and heavier plates and a correspondingly thicker explosive layer. Such 'heavy ERA,' such as the Soviet-developed Kontakt-5, can break apart a penetrating rod that is longer than the ERA is deep, again significantly reducing penetration capability."

More good news about ERA is that not only is it a viable and widely-adopted concept, but it is also combat-proven: "Protection by explosive modules was deployed by the Israel Defense Forces in the late 1970s, and was first, and successfully used in combat with the Israeli Army M-60s and Centurion tanks in the 1982 War, and later, by the Russian army in the mid 80s. Reactive armor utilizes add-on protection modules conforming of thin metal plates and a sloped explosive sheath, which explode when sensing an impact of an explosive charge (such as high explosive anti-tank - HEAT projectile)," according to Tamir Eshel in an article, "Protection Systems for Future Armored Vehicles -- Add-On Reactive Armor Suits," from DefenseUpdate.com.



(Left) Figure 1. How an ERA works. (Above) Figure 2. M60 Patton Tank Fitted with ERA Plates (Information and figure provided by Howard Kleinberg)

ERA is already in widespread use in U.S. inventories, albeit in its current role of anti-tank missile and rocket protection. Figure 2 shows one of the first combat vehicles to be equipped with ERA: a U.S.-made M-60 Patton tank, as fitted in Israel with ERA plates. Similarly, Figure 3 shows a U.S. Army M1A2 tank urban survival kit (TUSK) system enhancement package (SEP), which includes, among many other upgrades, ERA plates attached to the tank's side-skirts to protect the tank from being disabled by anti-tank Fires. And finally, Figure 4 shows a U.S. Army M3A3 Bradley armored fighting vehicle (AFV) also equipped with ERAs.

In sum, ERA is already in widespread use on Western military vehicles, including those of the U.S., for protection from attacks coming from all horizontal directions (and, oftentimes, from above, as well). It is the assertion of this article that these well-proven, well-established vehicle-protection technologies can and must also be deployed to protect our vehicles from attacks coming from below.

ERA will counter all types of IEDs. Of significant note is that since explosively formed projectiles (EFPs) are effective, high-velocity penetrators, and since ERA is effective against kinetic energy penetrators, ERA should, in principle, be effective in defending against virtually all types of IEDs, from general explosive rounds, through shaped-charge rounds, and even through EFP weapons.

What's different: attach ERAs underneath the vehicle. It is the crux and primary assertion of this article that ERA layers can and must also be attached to the V-hull undersides of a vehicle in addition to the sides and top of a vehicle, to protect it against anti-tank weapons of all kinds, both launched and buried, from above, around, and below. Put simply, use the ERA's counter-explosion capabilities to 'blow back' at the upwelling IED blast, reducing, deflecting, and dispersing the latter's destructive blast and effects.

Advantages of ERA against IEDs. ERA have a number of protective features that would also be advantageous to thwarting IEDs of almost any size.

- The ERA counter-blast would 'blow back at' the IED blast itself to both disrupt, disperse, and deflect to vector the IED's blast away from the vehicle, vastly diminishing its effects and risks to the protected vehicle. Indeed, ERAs would exploit their locations and orientations attached to the V-bottoms of MRAP-type vehicles to 'amplify' the blast-diverting effect of the V-bottom configuration itself against an IED blast.
- ERAs would be 'self-scaling' in their counter-effect: only those ERA tiles that would be sufficiently affected by the IED explosion would 'react' to the blast, defending all of the areas underneath the vehicle that would otherwise be dangerously imperiled by the IED blast.
- ERAs are well-established defensive technologies, and can be readily obtained by U.S. forces.
- ERAs would enable vehicles thusly protected to survive much larger IED blasts than currently possible with passive designs and methods.
- ERAs could also provide enhanced protection to other vehicles not currently optimized to counter large IED blasts, such as 'regular' trucks, HUMMVs, and even tanks and AFVs.
- ERAs provide, according to Eshel, "a significant increase in the level of protection, primarily against shaped charges, without a proportional increase in the weight of the protected platform."
- ERAs are well-established, combat-proven technologies for protection against threats that are strikingly similar to those posed by IEDs.
- And finally, should future IED makers attempt to counter ERA vehicle-protection with 'smarter,' tandem-exploding IEDs, this, too, could be easily countered by adding layers of ERA plates, which would provide both

Figure 3. U.S. Army M1A2 tank urban survival kit (TUSK) system enhancement package (SEP), which includes, among many other upgrades, ERA plates attached to the tank's side-skirts to protect the tank from being disabled by anti-tank Fires. (Information and figure provided by Howard Kleinberg)

additional back-blast scaling and redundancy against additional IEDs.

Additional research required. However, ERAs are not normally applied to the more 'abrasive' undersides of military vehicles that must perforce go off-road. As a result, additional research will to be required to determine how and where to mount and protect ERA plates to the hull-bottoms of MRAPs and other combat vehicles. It must be determined how to best disperse and/or deflect an IED up-blast away from the vehicle without imperiling the vehicle using the ERA.

Furthermore, it might be necessary to protect the ERA blocks themselves from ablation or impact-degradation by stones and dirt thrown up by the vehicle's wheels, impacts with the ground, and so on. One potential solution to this problem would be to add a layer of Kevlar or other protective material atop the ERA, shielding the armor from the ground itself. Another potential challenge is that ERA tiles may prove to be too 'thick' in their current formats to be fitted to the undersides of current combat and support vehicles without reducing ground-clearance, particularly for off-road mobility. Yet another potential challenge is the need for research and development of ERA blocks optimized for safe use on the undersides of vehicles where the vehicle's wheels, suspension, treads, and other components are in immediate proximity, and must not be destroyed by the very defensive measure meant to protect them, at least, not unless the survival of the vehicle and its crew is at stake. None of these issues appear to present any serious impediments to the long-term emplacement of ERAs on military vehicles' undersides.

The future of ERA and its ramifications for IED defense. Finally, as IEDs and other in- and underground threats to military vehicles evolve, so too are ERA technologies expected to evolve and improve. According to defense-technology analyst Tamir Eshel, "Further advancements of the ERA, considered for future implementation, include a 'smart armor' concept that has integrated sensors and microprocessors embedded into the armor, which sense the location, type, velocity and diameter of the projectile or jet, and will trigger smaller explosive elements, to form an effect tailored against a specific penetrator."

IEDs are a threat to U.S. and all other ground forces: a threat that will not go away for a very long time. While many other methods and technologies are already deployed, and more are on the way, IEDs remain an ongoing threat, both to vehicles and to dismounted troops. This article addressed the IED threat to vehicles of all kinds by proposing the attachment of explosive reactive armor to the undersides of combat vehicles of all types, in order to provide them with far greater protection against IEDs of virtually all types and sizes.

This solution would make use of existing, affordable, relatively low-cost and low-weight, combat-proven technologies, and would be applicable to all types of vehicles that must operate in hostile zones where IEDs are or will be in use.

While this approach may not make military vehicles completely immune to IEDs, it should go a very long way towards that goal, could be applied in the very short term, and would provide increased leverage for future IED threats with future protection enhancing growth-paths of its own. In short, we would 'fight fire with fire' by pitting 'ERAs versus IEDs.'

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Figure 4. U.S. Army M1A2 with Tank Urban Survival Kit (TUSK) System Enhancement Package (SEP); note ERA on sides. (Information and figure provided by Howard Kleinberg)

Operational Approach to Phase IV Stability Operations

By MAJ Andrew Attar

Why are Phase IV / stability operations hard to bring to a definitive conclusion? Are the end states of our typical Phase IV lines of effort (LOEs) unrealistic and unproductive? Why also is it difficult, if not impossible, to achieve lasting progress and irreversible momentum? The problem may be the operational approach which frames our targeting. The traditional approach to developing Phase IV LOE may be too broad, too ambiguous, and too stove-piped.

The kinetic fight dominates. There are several negative results common to the traditional, operational approach. First, the security LOE becomes virtually independent of the other LOEs. The goals and objectives underpinning the security LOE have very little direct connectivity to the goals and objectives within the other LOEs. One of the many results of this disjointedness can be seen from an organizational dynamics perspective. How often within a division, brigade or battalion headquarters do we find the 'lethal' and 'non-lethal' staffs working, if not independently of each other, then at least far from a unified, synchronized and mutually supporting relationship? The threats we face in Phase IV do not operate this way, yet generally we do. The threats to Phase IV security and return to normalcy (both lethal and non-lethal) are interrelated and interdependent. Why is our approach to solving them not interrelated and interdependent?

Teams of teams – instead of team of teams. Another result of the traditional approach to LOE development in Phase IV is the lack of unity of effort. As stated above, even within the counterinsurgency (COIN) force itself, unity of effort between what we artificially label as 'lethal' and 'non-lethal' staff sections is difficult to achieve. If within the COIN force, which largely has the advantage of unity of command, unity of effort cannot be achieved, how much more difficult then is it to achieve substantial unity of effort between the COIN force and the various federal agencies (i.e., Department of State) supporting the COIN force? How much more difficult is unity of effort between the COIN force and the nongovernmental organizations (NGOs) and intergovernmental organizations (IGOs)? And, how much more difficult is unity of effort between the COIN force and the host nation ministerial departments and local government offices? Many of these organizations external of the COIN force conduct their activities across several of our LOEs; hardly will you find them operating solely within the scope of one of our LOEs. To be certain, they typically have the advantage of much more focused and limited objectives -- but on the other hand, their approach to solving problems tends to span the economic, governance, essential service, civil control, and even security lines of effort. For instance, an NGO initiative to reduce humanitarian suffering in indigenous displaced persons (IDPs) camps will be working across several lines of effort in order to address the problem of humanitarian suffering within IDP camps. An inherent commitment to unity of effort exists within these organizations, which is not routinely found within the COIN force. In comparison, the COIN force's efforts to address the same humanitarian problem within the IDP camps will typically be part of a goal or objective within one particular LOE of the operational plan, with little to no support targeting the other LOEs. For instance, one may find an IDP-related objective within the governance LOE. Subsequently, during the targeting process, select only 'governance'-related (typically provincial reconstruction teams (PRTs), but not exclusively) Fires to address the IDP problem.

Birds of different feathers do not flock together. The stove-piped LOE approach within the COIN force will cause a disruption to any possible unity of effort with the other external organizations. Organizations with similar operational approaches tend to find it easier to communicate with each other, support each other, and realize common goals and

A C-130 drops its cargo during a supply air drop in Zabul province, Afghanistan, to Special Operations Forces conducting Village Stability Operations. (Photo by Cpl. Mark W. Stroud, U.S. Marine Corp)

objectives together. Organizations which approach problems differently, especially in terms of fundamental visualization of the problems, will typically part ways rather than make substantial progress together.

Sound and fury signifying little. The final major result we see from the traditional approach to LOE development in Phase IV is the lack of real, substantial progress. We do a lot, but accomplish little, operationally. The Phase IV LOEs are so broad - encompassing all the myriad of factors making up a society - causing COIN forces to spend too much time doing too many things, with little cross-linkages. Let us consider 'support to economic development and infrastructure,' which is a typical Phase IV LOE.

Economic development is the epitome of a complex system - encompassing political, social, cultural, legal, financial, and security sectors. An economic target developed and executed under the traditional LOE approach will often have few linkages to these other sectors. Economic progress under this approach will be negligible, at best.

A different approach. When planning the operational approach to Phase IV/stability operations, commanders should provide a strong linkage among the LOEs. This linkage must be much more substantial than what amounts to an information operations (IO) theme. It must be real and tangible. It must fundamentally focus the entire headquarters, along with subordinate headquarters, into a team of teams, unified in effort around a single decisive operation (DO). All the goals and objectives across all the LOEs should be linked in some way (even indirectly) to one single decisive operation.

This decisive operation must be concrete and limited. If the objective is a theme or a concept, it will not be concrete and will not fit this approach. If the objective is some grand social, political, or economic aspiration for the AO, it will not be limited and will not fit this approach. 'Return to normalcy' or 'irreversible momentum' or 'by, with and through' are themes, not concrete, unifying objectives. They are not the type of decisive operation which will successfully link the LOEs together and provide unifying focus and direction to the team of teams. Likewise, 'ending sectarian violence' or 'political reconciliation' or 'economic prosperity' are aspirations, not decisive operations. They are not limited and will not work under this new approach. Under this approach, the COIN force must avoid hinging their campaign on both lofty rhetoric and unreasonable aspirations. LOE end states must be linked to a concrete and limited decisive operation.

'Resettlement of IDPs' or 'reestablishment of the dairy industry' are two examples of decisive operations which could successfully link Phase IV LOEs in this new approach, depending on the circumstances of a particular area of operation (AO).

The circumstances of AOs will vary requiring a thorough intelligence preparation of the battefield (IPB), giving the commander and staff a comprehensive situational understanding. However, the 'resettlement of IDPs' or 'reestablishment of the dairy industry' are examples of decisive Phase IV operations which are

Local village elders gather for a shura with U.S. Special Operation Forces in Zabul province, Afghanistan, August 25. (Photo by Cpl. Mark W. Stroud, U.S. Marine Corp)

concrete and limited. Furthermore, when a headquarters analyzes the true, complex natures of these problems, they find each problem has major components, contributors, influencers, and friction points which cross every single traditional Phase IV LOE. If chosen as the decisive operation for the organization, they will literally bind together all the LOEs.

Doing this provides the headquarters with a framework for targeting and actually making real progress in the AO. It also employs all the LOEs and all the resources of the organization in harmony.

This approach does not mean the subordinate commander is limited from targeting when a direct linkage to the decisive operation cannot be made. Exceptions will exist.

In general, however, the targeting process should be focused along the decisive operation, with all the shaping operations linked to the decisive operation.

As an example. If IDPs are a large problem within an AO, think about the massive amount of cross-functional work it takes to successfully resettle those IDPs. Within the security LOE, the camps must be secure and free from hostile influence or recruiting. The IDPs must be secure to transit back to their homes. The IDPs must be secure back in their homes and neighborhoods. Within the civil control LOE, the resettled IDPs must be able to address their security-related grievances to the host nation police. The host nation police must be able to investigate crime and deter crime. The host nation prosecutors must be able to successfully convict criminals. The host nation judges must be able to conduct court operations. Within the governance LOE, the various ministries must first account for and document all the IDPs. They must control the orderly resettlement. They must deconflict the political and legal challenges to resettlement. They must reintegrate the returnees into the local political systems.

Within the essential services LOE, beyond the immediate humanitarian assistance within the IDP camps, the critical essential support and services (ESS) nodes must be restored before resettlement can occur. The ministerial sub-departments within local areas must be prepared to receive back the IDP population, and account for the increased demand load on the various ESS networks.

Within the economic development LOE, the basic industrial or agricultural production, transport and marketing systems must be reestablished to support the employment of the IDPs after resettlement. As one can see, this

one decisive operation of 'resettle IDPs' encompasses every critical component within each LOE.

Another example. In a given agrarian AO 'reestablish dairy industry' may be deemed the decisive operation. Like the IDP DO, this DO will require substantial targeting across all the LOEs. Host nation security forces (HNSF) must be able to protect the farmers and the supporting dairy networks. The legal system must be able to police and prosecute criminal activity ranging from stopping illegal irrigation canal tapping to disrupting illegal cartel or organized crime activity exploiting any aspect of the diary supply chain. The ministries of agriculture, water resources, transportation, and others will need to have regional offices, engineers, and specialists staffed and resourced to support and regulate the dairy industry. The ministries of electricity, rural development, and others will need to establish or repair the critical ESS nodes, which power and support the dairy industry.

Rising tides lift all boats. Not only will the concrete and limited Phase IV decisive operation tie together the LOEs, but it will also improve many of the other situations and problems within the AO. Think of the governmental sophistication and coordination required to thoroughly resettle IDPs. Aggressively working a decisive operation based on IDP resettlement will result in residual improvement across many areas spanning all the LOEs. As the host nation government evolves to meet the challenges of resettlement, ministries and departments with only indirect ties to the IDP problem will improve.

A thoughtfully selected, concrete and limited, decisive operation links together all of the Phase IV LOEs. It also comprehensively employs targeting within all the LOEs, while not overly restricting or limiting actions. It does, however, require the commander to do something innovative and perhaps even audacious—stop trying to do everything and choose a true, decisive operation (not in name only) within Phase IV. The commander must provide focus in a real and substantial way. The commander must employ some degree of risk and innovation. The traditional approach to broadly defined Phase IV LOEs, and assigning decisive operations in name only, seems less risky because it is so broad and seems to 'cover all the bases. It is, however, less innovative and less likely to produce real results for the long term.

The use of the designator main effort (ME) should be retained for designating the unit within a particular AO which will receive priority of support. The use of the designator DO, however, should no longer generally be used during Phase IV to designate a specific unit within a particular AO. The approach to designating a DO must be radically different in Phase IV. A good test for verifying the usefulness of a proposed Phase IV DO would be to ask oneself:

"How can every organization, both within my command and partnered outside my command, contribute in a real sense to this DO?"

If every unit inside and every organization outside cannot in a substantial sense, directly contribute to the unit's DO, then it is a DO in name only and not in synch with the approach recommend here.

Where to start. We start by developing a decisive operation. Some thought should be given to determining the threat center of gravity after completing a comprehensive IPB. The IPB must cover the entire AO, and look at governance, economy, civil control, and essential services as comprehensively as it analyzes security and the host nation security forces. Only through approaching, if not arriving at, situational understanding, can the commander and staff make a 'best guess' at a decisivie operation close to the threat center of gravity. The linkage should be related to the threat center of gravity as closely as possible. Ultimately, however, the linkage between the DO and the threat center of gravity does not have to be perfect.

Why can the commander risk linking and focusing his Phase IV LOEs on something which turns out not to be the center of gravity? Because in Phase IV, the means justify the ends. In contrast to Phase III, when we conform our means and ways to meet our ends, Phase IV should take a different approach.

At first, it may sound illogical to say within Phase IV means are more important than ends. In Phase IV, however, our goal is to establish systems and procedures within the host nation. In essence, the development of host nation means and ways (systems and procedures) is our operational ends. Our approach is more important than our goals because our goal, in reality, is a host nation with functioning procedures. The COIN force working as a unified, coordinated system (as a team of teams) will support the host nation in developing their own unified, coordinated systems.

Commanders must give real thought to fresh operational design in planning Phase IV LOEs. The goal of the design must be a set of Phase IV LOEs which are linked to a decisive operation. The decisive operation must be limited in scope, but large enough to have significant linkages to all the LOEs. The decisive operation must also move beyond lofty messages, and be concrete enough to translate into real, measurable progress on the ground.

Major Andrew Attar currently is a student in Class 12-01 at the U.S. Army's Command and General Staff College. His two most recent deployments were in 2008 and 2010, both in Iraq with the 2nd Brigade, 1st Infantry Division. During the 2010 deployment, Attar served as the executive officer of the Brigade Special Troops Battalion. In 2008, Attar served as the chief of the brigade's Joint Project Management Office, where he was responsible for the targeting. From 2006 to 2008, Attar served in Ankara, Turkey, as the Chief of Mod/Sim at NATO's Center for Excellence for the Defense Against Terrorism. From 2003 to 2006, he served as an Assistant Professor of Military Science at Missouri Western State University. From 2001 to 2003, MAJ Attar served as Commander, Charlie Battery, 3rd Battalion, 43rd Air Defense Artillery. From 1998 to 2000, he served as a battery executive officer and battalion S4 within 3rd Battalion, 2nd Air Defense Artillery. In 1997, Attar served as a launcher platoon leader within Charlie Battery, 1st Battalion, 43rd Air Defense Artillery. Attar is a 1996 Distinguished Military Graduate from the University of Connecticut.

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U.S. Army SPC Ernesto De Jesus, Bravo 5-52nd Air and Missile Defense Battery launcher station technician and native of Puerto Rico, looks onward after prepping a PAC-2 launcher during a crew drill at an undisclosed location in Southwest Asia, March 6, 2012. PAC-2 launchers can be configured to use anti-aircraft weapons and surface-to-air missiles in order to defend against potential aerial threats. (Photo by Staff Sgt. Nathanael Callon, U.S. Air Force)

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