Field Artillery

A Professional Bulletin for Redlegs

March-April 2001

Supporting the MANEUVER COMMANDER

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INTERVIEW

ARTICLES: Supporting the Maneuver Commander

DEPARTMENTS

PURPOSE: (as stated in the first ***Field Artillery Journal*** in 1911): *To publish a journal for disseminating professional knowledge and furnishing information as to the Field Artillery's progress, development and best use in campaign; to cultivate, with the other arms, a common understanding of the power and limitations of each; to foster a feeling of interdependence among the different arms and of hearty cooperation by all; and to promote understanding between the regular and militia forces by a closer bond; all of which objects are worthy and contribute to the good of our country.*

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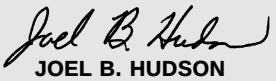

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The Senior Fire Support Conference— *We Have Work To Do*

This April, Field Artillerymen will come together to "level our bubbles" and discuss the key issues facing our branch as the Army moves forward with Transformation. The senior leaders of the Field Artillery and our Army will gather at the Field Artillery School, Fort Sill, on 25 to 27 April for the first Senior Fire Support Conference since April 1999.

To realize how significant the past two years have become to our Army's future, one need only look back to the previous fire support conference. Transformation was not discussed; in fact, it was only an idea in the mind of the future Chief of Staff of the Army (CSA). No one could have predicted the significant shift in thinking that would come to characterize Army Transformation in the past 19 months. It follows, therefore, that the theme for this year's conference is "The Field Artillery in Transformation," focusing on the organization and role of the Field Artillery as the Army transforms into a lighter, more lethal force.

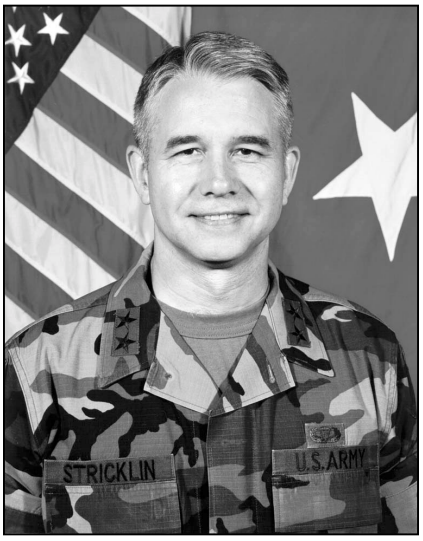
Transformation recognizes that joint and coalition warfighting will remain preeminent, especially regarding fires the Field Artillery provides in support of these operations. Also, close support fires and precision engagement are critical capabilities that directly contribute to our ability to support the maneuver forces. Finally, and arguably most importantly, the Field Artillery relies heavily on its forces in the Army National Guard to provide decisive fires that will give our maneuver commanders the tactical and operational advantage in future engagements.

A mere two years later, our Army and the Field Artillery are consumed in a complex and demanding process that will enhance our ability to execute the missions we are assigned and provide the United States the capabilities it needs to meet 21st century threats to its interests and overall national security. During this year's Senior Fire Support Conference, command teams from the active and Army National Guard Field Artillery brigades and division and corps artilleries will assemble at Fort Sill to renew their ties to their branch home, fellow Redlegs and maneuver commanders. They also will come to share their thoughts and help shape the future Field Artillery force.

One fundamental that has not changed over the years is the Field Artillery's commitment to supporting the maneuver commander—nor should it change in the future. However, of primary concern to me, as the Chief of the Field Artillery, is the perception of some of our maneuver commanders that the Field Artillery is neither as responsive nor effective as it should be. I would like to share some of my thoughts on this topic in hopes they will generate productive discussions during this year's conference.

Responsive Fire Support—A Combat Multiplier. The Field Artillery does not fight alone. The American Army fights as a combined arms and joint team, and the Field Artillery is an integral part of that team. The whole is greater than the sum of its parts, and in the case of the Army, the summation of the various branches and components is what makes the whole Army a premier force—the best Army in the world.

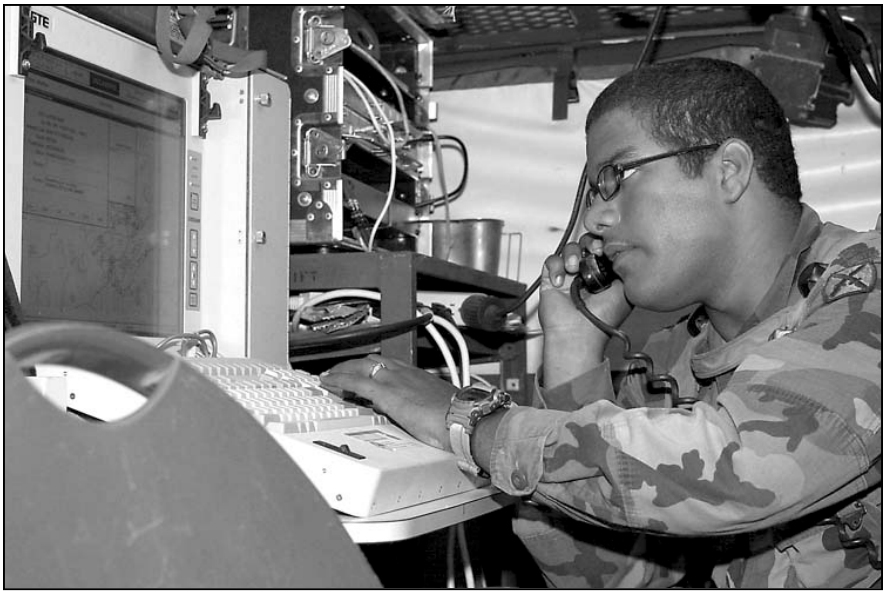
Furthermore, the United States military fights jointly, and each service brings vital capabilities to that fight. To that end, the maneuver or joint task force commander is the leader of those combined arms and joint forces. As a component of that team, our job is to plan, synchronize and execute timely, accurate fires for that commander—to completely synchronize our fires with that commander's scheme of maneuver or plan for defense.



Selling Fire Support to the Maneuver Commander: A Simple Strategy to Maximize Effects. The relationship of the fire support coordinator (FSCOORD) to the maneuver or joint task force commander is critical. There can be *no* hesitation or questioning when it is time to execute. The FSCOORD's word is golden. What the maneuver commander asks for is precisely what he needs and what he will get. Precision, lethality and responsiveness must be the FSCOORD's hallmark.

As FSCOORDs, we must give the maneuver commander achievable recommendations and options for what fire support tasks are *essential* to accomplish the scheme of maneuver or plan for defense. We must not oversell fires' capabilities or our skills. If we promise more than we can deliver or promise to deliver more quickly than we can, we put our credibility at risk and contribute to the perceptions of unresponsive fires.

Once the maneuver commander and FSCOORD agree on the essential fire support tasks (EFSTs) for the mission at hand, the maneuver commander must exercise a degree of tactical patience while those tasks are performed to standard. If the maneuver commander does not demand the EFSTs be completed in accordance with his synchronization matrix and instead begins the maneuver phase of the operation, then either the tasks were, de-facto, not *essential* or the maneuver commander has made a conscious decision to take the risks inherent with their not being completed.



PFC Rolando D. Acosta, 3-6 FA, 10th Mountain Division, operates AFATDS during the Joint Contingency Force-Advanced Warfighting Experiment at Fort Polk, Louisiana.

Issues that Affect the Perception of Unresponsive Fires. We, as fire supporters, must do some internal housekeeping to fulfill our part of providing responsive, accurate fires. I raised our three most pressing issues in my article "State of the Field Artillery 2000: Looking Ahead to the Objective Force" for the November-December 2000 Red Book edition: the poor replication of fires, the latency of the fire support system and a lack of truly digital targeting devices.

The poor replication of fires at our Combat Training Centers (CTCs) is a key reason for the perception of unresponsiveness. Maneuver commanders have the misperception that indirect fires are not the combat multiplier that both history and actual operations have proven.

Our automated fire support systems and top-down fire planning have encumbered our ability to provide timely and accurate fires. AFATDS user intervention points, when enabled, add latency to the fire direction process by requiring user action at each point, needlessly slowing our ability to provide fires.

Finally, our fire support teams (FISTs) and forward observers (FOs) lack the ability to push a single button and obtain an accurate target location and forward the mission onto the shooter. Instead, after obtaining the target location, the FO or FIST must enter the data manually into a handheld terminal unit (HTU) or lightweight computer unit (LCU), with the exception of the Bradley FIST vehicle (BFIST) observer.

We also must gain a better understanding and acceptance of procedures for clearing fires. We have effective doctrinal procedures for clearing fires that are neither followed nor trusted by our maneuver commanders. If the company commander clears a target in his area of responsibility, then that target is cleared and, under normal circumstances, should not require reclearance from higher-level commanders.

Our doctrine relies on the decision of the commander on the ground, and we must have confidence in our junior officers to do their jobs. Most importantly, lack of such confidence has an impact on the responsiveness of our fires.

These are some of the issues that the Field Artillery School is working. We feel confident in our ability to advance these issues through trends reversal initiatives and during two fires-focused CTC rotations in 2001.

I am looking forward to our conference in April: "The Field Artillery in Transformation." I know all Field Artillery leaders will come prepared to articulate many solutions to these problems. In my first "From the Firebase" column for this magazine (September-October 1999), I asked our maneuver commanders to send me their perceptions of fire support. I haven't received many replies. Of critical importance for the April conference is for our respected maneuver leaders to help us frame the problems and formulate solutions.

2-15 FAR Names Durham Hall

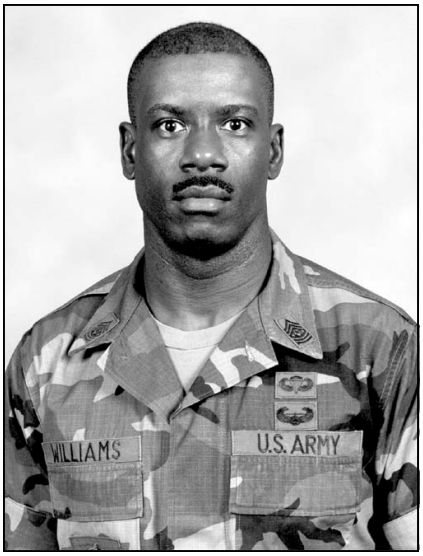
On 28 July 2000, Medal of Honor (MOH) winner Second Lieutenant Harold B. "Pinky" Durham, Jr., was remembered in the dedication of the 2d Battalion, 15th Field Artillery Regiment's (2-15 FAR's) battalion headquarters as Durham Hall at Fort Drum, New York. 2-15 FAR is part of the 10th Mountain Division (Light Infantry) Artillery.

Lieutenant Durham received his Medal of Honor posthumously in Vietnam for conspicuous gallantry while serving as a forward observer with C/6-15 FA, 1st Infantry Division. Wounded by a claymore mine and enemy machine gun fire, Durham continued to call for and adjust indirect fires in support of his hard-pressed infantry. He called fires in on his position and, later, chose a small clearing that exposed him to enemy fire but that offered the best advantage for observation, dying while grasping his radio handset. Durham is the most decorated soldier who served in the 15th Field Artillery Regiment.

L to R: Honorary Regimental Commander COL (R) Robert Brand, Junior ROTC Instructor at the New York Military Academy, looks on as John Durham and Genie Knapp, brother and sister of the Medal of Honor winner, cut the ribbon on Durham Hall with the assistance of LTC Samuel Johnson, commander of 2-15 FAR.

The Role of the NCO in Transformation

By Field Artillery Command Sergeant Major Anthony J. Williams



The US Army is in a period of transformation that will continue for many years. Decisions have yet to be made and organizations and operations will have to evolve toward our Objective Force in 2010.

But the Army cannot transform without the guidance, support and leadership of its NCO Corps. Throughout this period, NCOs must maintain fundamental soldiering at the forefront of everything we do. And that means we must focus on the basics, maintain Army values and facilitate the transformation.

Focus on the Basics. The best way to lead in a period of fast-paced change is to focus on the basics. NCOs don't need to worry about the color of the beret or type of Class A uniform we're all going to wear next year—we need to spend more time conducting in-ranks inspections and pay-day formations to teach soldiers how to properly wear the uniform they have. We set the standards.

NCOs need to spend more time with squad and platoon leaders, teaching them the importance of counseling and communicating with their soldiers and less time on the Internet. (And communicating means more than just talking to them; it's also listening to soldier concerns and doing something to solve their problems.) In other words, we need to train and mentor.

NCOs need to spend more time in the barracks waking up young soldiers and ensuring their living areas are up to standard—not assuming they're responsible adults who will accomplish these tasks. We need to supervise and develop soldiers, so they, too, may be NCOs one day.

NCOs need to spend more time enforcing physical training standards and weight control and developing challenging physical training programs. Enforcing physical standards in garrison will give soldiers the physical resources to draw on when they need them the most—in combat. We take care of soldiers.

NCOs are chartered to remain the Army's Backbone and promote readiness during the transformation. I've given just a few examples of setting standards, training and mentoring, supervising and taking care of soldiers—the basics NCOs provide for readiness today and for the Objective Force tomorrow.

Pass on Army Values. Whether it's today's Army or the transformed Army, our common values will sustain us. NCOs are the first line of contact for young soldiers who must learn, embrace and live by the Army's values: loyalty, duty, respect, selfless service, honor, integrity and personal courage.

We model Army values so we can credibly train and lead soldiers and set and enforce standards. Living Army values empowers NCOs to lead soldiers.

Go with Change. Change is going to happen. Change presents opportunities for the future. During the past 28 years of my Army career, I have seen a lot of changes.

I used the PRC 77 and TA 312 radios, but today we have the single-channel ground and airborne radio system (SINCGARS). I remember riding around in the small Jeeps, and now we have high-mobility multipurpose wheeled vehicles (HMMWVs).

When I came into the Army, the first school in the NCO professional development process was the primary leader course (PLC), not the primary leadership development course (PLDC) we have now, and the basic NCO course (BNCOC) didn't exist. I remember when units had to start moving from typewriters to computers. Now we couldn't conduct battery business without them.

Without exception, these are examples of changes I experienced that improved the Army, and all met with resistance from some of the force. These improvements were developed with NCO input, field tested with NCOs and soldiers in units and implemented by NCOs and other leaders. To be successful, the transformation needs the same NCO support.

The United States Army is in the midst of some of the most dramatic changes in its history. Never before has the Army undergone such a profound transition and yet remained trained and ready. It is our duty as NCOs to ensure the welfare of soldiers as our priority. And to do that, we must stick to the fundamentals of soldiering.

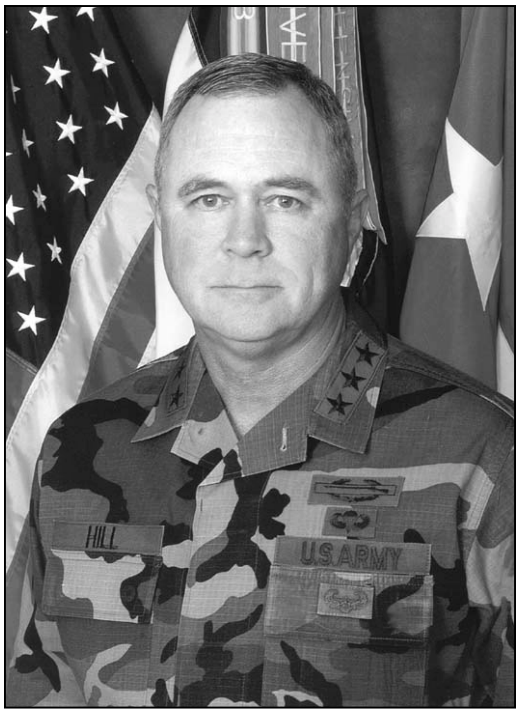
During transformation, the Army's greatest challenge will be dealing with the human dimension. That's NCO business.

Command Sergeant Major Anthony J. Williams has been the CSM of the Field Artillery and Fort Sill, Oklahoma, since June 1998. He also served as the CSM of the III Armored Corps Artillery, also at Fort Sill, and the CSM of the Division Artillery and CSM of the 3d Battalion, 7th Field Artillery, both in the 25th Infantry Division (Light) at Schofield Barracks, Hawaii. In addition, Sergeant Major Williams served as CSM of the 5th Battalion, 17th Field Artillery, part of III Corps Artillery. In three tours at the Field Artillery Training Center, Fort Sill, he was a Drill Sergeant for three years, a Multiple-Launch Rocket System (MLRS) Instructor for D Battery, Training Command Battalion, and a First Sergeant and Battalion Adjutant for the 2d Battalion, 80th Field Artillery.

Lieutenant General James T. Hill, Commanding General of I Corps and Fort Lewis, Washington

"Proactive Artillery" for Fast, Responsive Fires

Interview by Patrecia Slayden Hollis, Editor



Q *The FA is grappling with how to make fires more responsive and clearance of those fires more timely in today's fight. From your perspective as a recent commander of the 25th Infantry Division [(Light) at Schofield Barracks, Hawaii] and a current corps commander, what should we focus on to fix the problems?*

A To make fires more responsive, the Field Artillery needs to focus on changing the mindset of Field Artillerymen. Let me explain.

The Army already has the technology to make fires fast and effective. As a division commander, I had AFATDS [advanced FA tactical data system] next to the analyst in my ACE [analysis control element]. AFATDS could send a target digitally directly to the firing unit—sensor to shooter.

In my corps TOC [tactical operations center] during Yama Sakura [joint and combined exercise in Japan], AFATDS was next to feeds to the UAV [unmanned aerial vehicle] and JSTARS [joint surveillance and target attack radar system] with digital reach back to the analyst at Fort Lewis. We could pick up a target on ELINT [electronic intelligence] and cross-cue it to the UAV and JSTARS and confirm it as an enemy target—three intel assets. The AFATDS operator then typed in and fired the target digitally. So the Army has the digital technology, and it only will get better.

The challenge is to change the mindset of the artilleryman. At the platoon, company and battalion levels, a fire supporter's entire job is indirect fires. Period. And if his FA unit isn't shooting fires or he isn't calling for mortars, then it's most likely his fault.

For example, when I was a platoon leader and company commander in the middle of a firefight in Vietnam, I never turned to my fire supporter and said, "I need fires!" I never *had* to.

When the enemy started shooting at us and I was trying to determine what was going on, a fire supporter with a radio crawled up beside me and said, "Sir, the rounds are going to impact over *there*. Where do you want them shifted to?" I didn't have to think about artillery until I had fires on the ground and began moving them around.

That does not happen routinely today. As the FORSCOM [Forces Command] DCSOPS [Deputy Chief of Staff for Operations], I sat in on the monthly discussions between the FORSCOM commander and the Combat Training Centers. At the JRTC [Joint Readiness Training Center, Fort Polk, Louisiana] in the first five days of engagements, which is the search and attack phase of the rotation, if an FA unit shot indirect fires in about 20 percent of the engagements, it was considered a very good unit. I have seen units at the JRTC that used indirect fires in 10 percent of the engagements or less. While my numbers may not be exact, the point is indirect fires are not employed as often as they should be.

Now, that's an artillery problem. If I am the maneuver commander involved in a firefight, thinking about 1,000 things, and I have an artillerymen right next to me whose sole job is to think about artillery, then he ought to be screaming in my ear, "*Artillery!* I'm going to put the rounds right *here*. Where do you want them shifted to?"

The artilleryman has to be proactive. When things get hot, he is standing right next to the commander and knows what's going on—he can clear the fires. He doesn't need to wait for his infantry or armor commander to tell him what to do. Proactive Artillery—that's the way it used to be and needs to be again.

When the 2d Brigade of the 25th Division went to the JRTC, I gave the brigade's DS [direct support] artillery battalion commander proactive artillery guidance. His criterion for successfully completing his mission was to use indirect fire, artillery or mortars, in at least 50 percent of the engagements. He was proactive and shot about 75 percent of the engagements.

The low percentage of indirect fires shot in engagements adds to a technological dilemma at the JRTC. Because the infantry commander does not get the same effects in simulation at the JRTC as he would on a real battlefield, he uses direct fire and maneuver to try to defeat the enemy. The problem is that on the real battlefield, he can't maneuver without indirect fires—if he does, he will *die*.

We need to fix the indirect fire effects simulation at the JRTC—and at the NTC [National Training Center, Fort Irwin,

California]. When we do, the maneuver commander will have a better appreciation for indirect fire effects. But the lack of proactive and, therefore, responsive fires is still the artilleryman's problem.

To some extent, we've slowed fires down with restrictive ROE [rules of engagement] and fear of fratricide. But, again, I think it's the artilleryman's job to clear fires—he knows as much as the commander knows—and doctrine should reflect that. It's the artilleryman's job to be proactive.

At the corps level, I take a hard look at numbers of rounds fired per mission. I turn to my FSCOORD [fire support coordinator] and ask him if he's shooting enough rounds. If your job as a Field Artilleryman is to shoot rounds, well then, *shoot* them—don't wait for the maneuver commander to force the issue.

Q *In recent years, the Army has had trouble retaining young officers. What advice would you give Army leaders who have immediate impact on or first-line contact with these young officers to develop and retain them in the force?*

A I tell lieutenant colonels that the day before they took command of their battalions they were senior members of the Army, but the day after, they were senior *leaders*. There is a difference. As senior leaders, they have greater responsibility for molding young people.

As a division commander, I made it clear to my battalion commanders that one of their METL [mission-essential task list] tasks was developing and mentoring lieutenants—not just showing them how to do their jobs, but also beginning to instill in them Army values—the professional ethics of selfless service and commitment to duty. And commanders do that by really talking with them and setting the example.

If Army leaders routinely work 16 hours a day, that sets a bad example. A leader can't work 16 hours every day without micromanaging something—he certainly isn't delegating. When the lieutenant sees his battalion commander working himself to death and not having any fun while doing it, then why would the lieutenant aspire to be like him?

Young people are going to walk away from that…or, at least, work 16 hours a day to make more money than they can in the Army. The Army has to be more personal—deal with people as people and not as part of "the machine."

The lieutenants and captains who stay in the Army most likely have worked for battalion commanders who are professionals, but who aren't workaholics, don't micromanage and have fun.

Q *As the corps commander for deploying the Initial Brigade Combat Team (IBCT) at Fort Lewis (initial operational capability, or IOC, currently projected for FY03), you face some challenges. Understanding the IBCT is optimized for SSCs [small-scale contingencies] and not intended for MTWs [major theater wars] without augmentation, if the brigade were deployed in an SSC that was escalating rapidly toward MTW-like operations, how would you support the brigade, for example, resupply Class V for the brigade's organic indirect fire, its FA and mortars?*

A That's a tough question. There's no one answer. Our actions would be situationally and politically dependent.

First, if a situation goes "south" for a deployed IBCT, it will have all the resources the US military can muster and probably many allied resources. We would begin covering the IBCT immediately by bringing in additional combat power and supplying whatever the brigade needs.

Most ammunition is not moved by air but by roll-on/roll-off ships that would be parked off shore to resupply and extract the IBCT, if necessary. Our Logistics Community is going to have to be innovative to resupply the IBCT, a force designed to be rapidly deployable and highly mobile with minimum organic logistical assets. However, to augment the brigade when things get hot, the "long pole in the tent" remains strategic airlift for the foreseeable future.

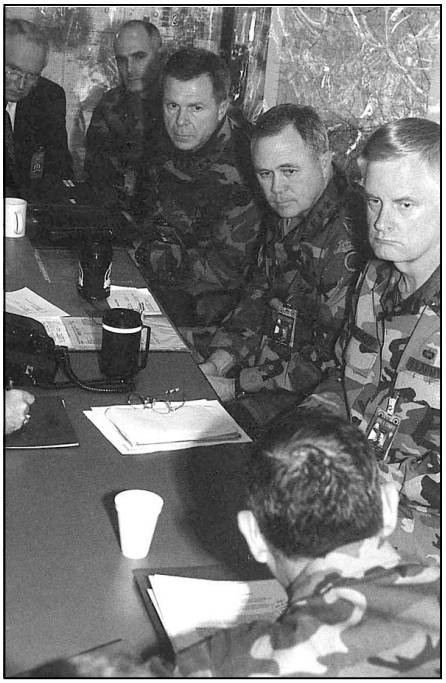
Second, we should have warning signs that the SSC is deteriorating—enemy troop build ups, political posturing, escalation of conflict, etc. The US should make the political decision to start moving combat power to the IBCT when the warning signs begin and before things get too hot. Again, strategic airlift is critical.

Q *The IBCT Organizational and Operational Concept (O&O) lists proactive counterfire as one of the FA battalion's mission. Why is this mission so critical and is the brigade structured to accomplish this mission?*

A Although General [Eric K.] Shinseki [Chief of Staff of the Army] was talking about tanks when he made this comment, it applies—soldiers survive on the battlefield in one of two ways: they either take the first-round hit and survive, or they don't get hit. And, clearly, if we can find and kill the enemy artillery before it can shoot at us, then we won't have to take artillery hits. This is especially critical for the IBCT designed to fight in dismounted infantry operations.

The initial brigade at Fort Lewis is uniquely structured to find the enemy's indirect fire systems. The RSTA [Reconnaissance, Surveillance and Target Acquisition] Squadron, with its scouts and TUAVs [tactical unmanned aerial vehicles], works with the FECC [fires and effects coordination cell], which serves as the counterfire headquarters and tasks the Firefinder radars—all to target enemy systems.

Through its division or corps link, the brigade has access to other national surveillance and targeting assets to help



LTG Hill plans I Corps operations with his staff during a recent Warfighter Exercise.

in the effort. (The IBCT is designed to deploy with either a division or corps headquarters; it was never intended to operate by itself.)

Finally, the very nature of IBCT combat operations helps protect it from enemy indirect fire. The infantry's IAV [interim armored vehicle] won't be a Bradley fighting vehicle; it will be a mobile, agile troop carrier designed to get the infantry out onto the battlefield rapidly for dismounted operations. The IAV will be difficult for the enemy to target, as all rapidly moving targets are.

Q *At the JRTC, mortars rarely get into the fight; and at the NTC, mortars are used less than they could be. Mortars have shorter ranges, less accuracy and fewer munitions options than cannons. Are mortars sufficient to be the primary close support and indirect fire system for the IBCT?*

A The brigade, which often will be deployed in urban and populated areas, has a lot of mortars for the close fight. But the artillery is part of the brigade at the insistence of infantrymen who said in the beginning that artillery is the indirect fire weapon of choice.

Now, having said that, mortar ranges, munitions, accuracy and FDC [fire direction center] capabilities have improved tremendously since I came into the Army in 1968. But as an infantryman, I would not want to go to an SCC, much less a war, without artillery. The Field Artillery is an indispensable part of warfighting in any part of the spectrum of conflict.

Q *The IBCT will have the lightweight 155-mm howitzer (LW 155) with the towed artillery digitization (TAD) package and the medium tactical truck as its prime mover vice the IAV. (TAD gives the LW 155 Paladin-like capabilities, such as on-board self-location and a fire control system.) Given the way the IBCT is expected to fight, is there a significant risk associated with the maneuver force being supported by towed artillery?*

A There's always some risk associated with having artillery less mobile and agile than the force it supports. But the question is, is there *significant* risk, and the answer is, "No." The brigade is designed to fight in a 50-by-50 kilometer area, and the LW 155 will be able to range targets in that area of operations. Depending on the mission, even if the brigade were deployed in an MTW, the answer is still, "No, we will not incur significant risk."

In my opinion, the day will come when we will put a tube on the IAV chassis, I suspect a 155-mm tube, to ensure the brigade's indirect fire can move as rapidly as its infantry. The 155-mm IAV could have all the Paladin-like capabilities of shooting rapidly from different locations and moving quickly about the battlefield—I have had industry reps tell me it's possible, given time and money.

Q *What advantages does the FECC bring to the IBCT?*

A The FECC at Fort Lewis pulls together all the fires and effects from lethal and nonlethal assets for the commander for faster, more efficient targeting. And as the FECC is positioned inside the brigade TOC [tactical operations center], it can rapidly and coherently synchronize fires and effects with maneuver and determine the best assets to employ against targets. It is a tremendous step in the right direction.

In the future corps FECC, I would be able to take full advantage of the FECC's civil-military operations capabilities, including its Nonlethal Cell [information operations, civil affairs, legal, intelligence, electronic attack and psychological operations]. At that level, I could focus the cell's assets on certain areas to quell unrest or solve problems that could stop conflict before it got started—even add a PAO [public affairs officer] or perhaps bring in a nongovernmental agency, such as the Red Cross, as relevant.

I have experimented with synchronized civil-military operations in my corps TOC on an ad hoc basis. In my role as JTF [joint task force] commander, CINCPAC [Commander-in-Chief of Pacific Command] has given me the mission of "Consequence Management" for the Pacific. In my TOC, I had fire supporters with their communications assets and skills coordinate my civil-military operations and organize relief efforts. I don't have a special staff to do all that, so a corps FECC would give me the resources to synchronize my assets and focus lethal and nonlethal effects in different directions.

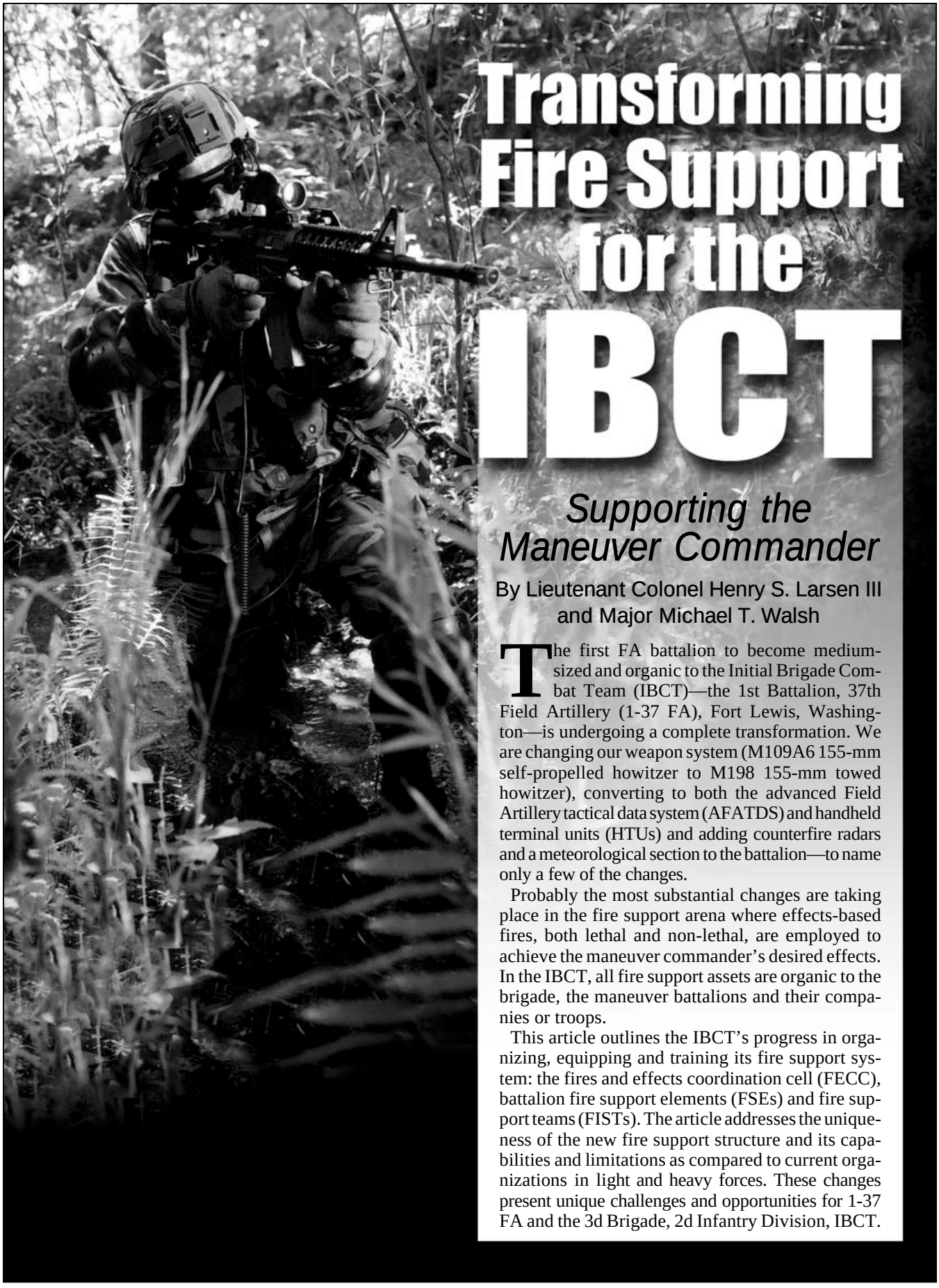
The FECC at Fort Lewis is just the beginning. We're going to have to work through and shape these ideas into fires and effects procedures for the Objective Force. But there's no doubt that in future operations, civil-military operations will have to come together in a coherent manner. We're going to have to be multiple disciplined—be able to switch gears rapidly from nonlethal to lethal operations or coordinate both in the same area of operations.

Q *What message would you like to send Army and Marine Field Artillerymen stationed around the world?*

A Field Artillery is the greatest killer on the battlefield and will remain so in the future. The infantryman holds the ground and ensures victory. But he won't be able to do that unless he has indirect fire superiority. So the artillery is the architect of victory.

Be proactive—go for it!

Lieutenant General James T. Hill became the Commanding General of I Corps and Fort Lewis, Washington, in September 1999. His previous assignment was as the Commanding General of the 25th Infantry Division (Light), Schofield Barracks, Hawaii, the same division in which he served as the Assistant Division Commander (Support) and, simultaneously, as the Deputy Commanding General of the Multinational Force and Deputy Commanding General of US Forces in Haiti in the UN mission in Haiti. He also served as the Deputy Chief of Staff for Operations of Forces Command (FORSCOM) at Fort McPherson, Georgia, and previously, as Chief of Staff of the 101st Airborne Division (Air Assault), Fort Campbell, Kentucky, the same division in which he commanded the *Always First* Brigade in Southwest Asia during Operations Desert Shield and Storm. He commanded the 1st Battalion, 35th Infantry, part of the 25th Division. In addition, he commanded three companies: one in the *Always First* Brigade while in Vietnam, one in the 3d Ranger Regiment at Fort Benning, Georgia, and the third in the 2d Squadron, 7th Cavalry, Fort Hood, Texas.



Transforming Fire Support for the IBCT

Supporting the Maneuver Commander

By Lieutenant Colonel Henry S. Larsen III and Major Michael T. Walsh

The first FA battalion to become medium-sized and organic to the Initial Brigade Combat Team (IBCT)—the 1st Battalion, 37th Field Artillery (1-37 FA), Fort Lewis, Washington—is undergoing a complete transformation. We are changing our weapon system (M109A6 155-mm self-propelled howitzer to M198 155-mm towed howitzer), converting to both the advanced Field Artillery tactical data system (AFATDS) and handheld terminal units (HTUs) and adding counterfire radars and a meteorological section to the battalion—to name only a few of the changes.

Probably the most substantial changes are taking place in the fire support arena where effects-based fires, both lethal and non-lethal, are employed to achieve the maneuver commander's desired effects. In the IBCT, all fire support assets are organic to the brigade, the maneuver battalions and their companies or troops.

This article outlines the IBCT's progress in organizing, equipping and training its fire support system: the fires and effects coordination cell (FECC), battalion fire support elements (FSEs) and fire support teams (FISTs). The article addresses the uniqueness of the new fire support structure and its capabilities and limitations as compared to current organizations in light and heavy forces. These changes present unique challenges and opportunities for 1-37 FA and the 3d Brigade, 2d Infantry Division, IBCT.

Figure 1 depicts the transformation process for fire supporters in the IBCT. The time line began early last year after the Chief of Staff of the Army announced plans to transform the 3d Brigade into a medium-sized BCT that can deploy to a theater of operations within 96 hours and conduct operations across the conflict spectrum.

As such, IBCT fire supporters must be able to operate in varying, complex environments as required by the "IBCT Organizational and Operational Concept" (O&O) document and the *Brigade Special Text (BST) 6-20-40 Tactics, Techniques and Procedures (TTP) for Fires and Effects for Brigade Combat Team (BCT) Operations*.

Organizing the Fire Support Structure. The brigade FSE has been replaced by the FECC while the battalion FSEs and FISTs are smaller but digitally enhanced with AFATDS, HTUs, Force XXI battle command brigade and below (FBCB^2), enhanced position location reporting systems (EPLRS) and other systems. These digital upgrades are designed to help compensate for the fire support system's reduction in manpower.

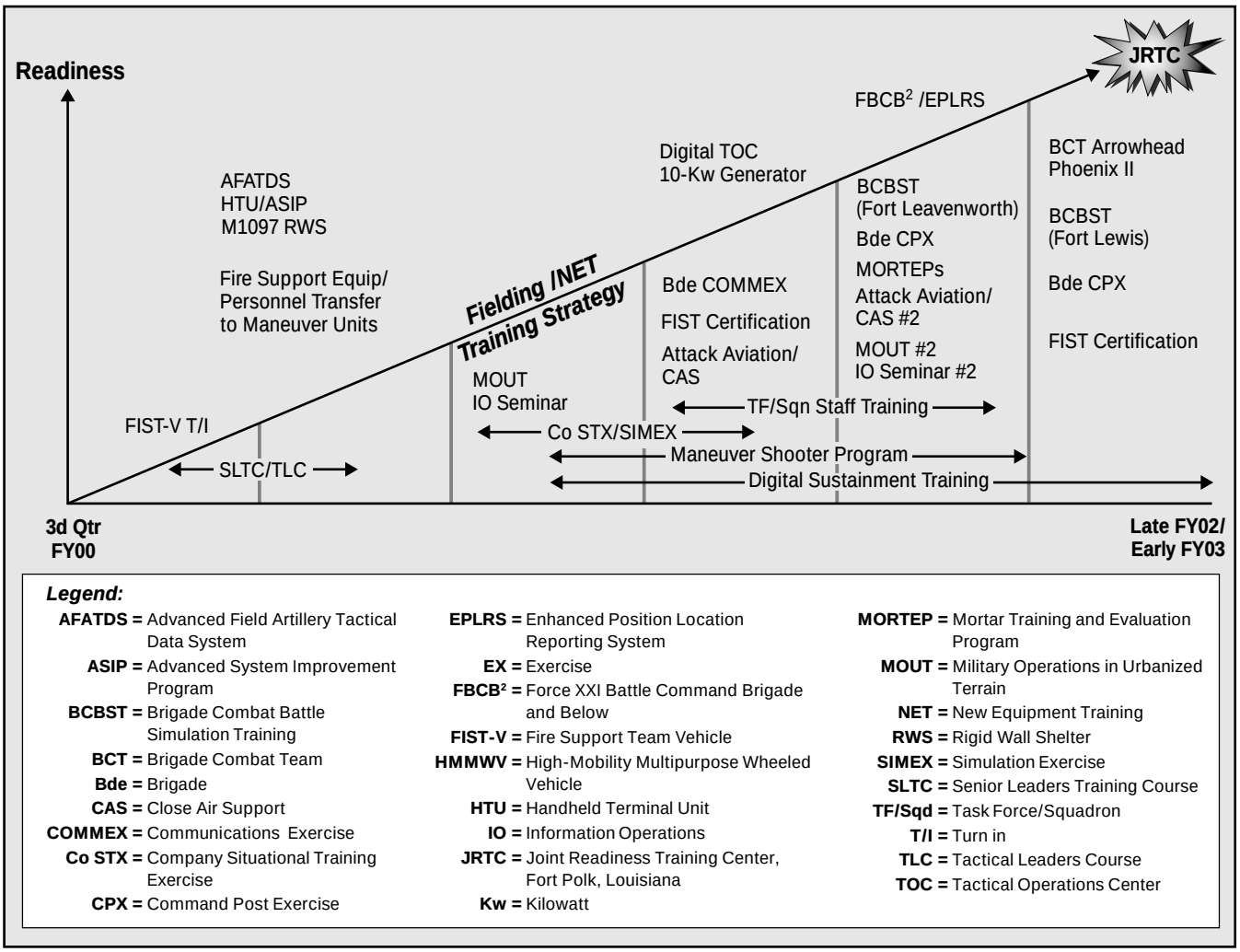
In the IBCT's three infantry battalions, the forward observer (FO) teams have been eliminated, transferring the responsibility for initiating calls-for-fire solely to maneuver shooters at the platoon level and below.

The FECC. This is a cell within the larger brigade tactical operations center (TOC). Unlike a traditionally resourced brigade, the FECC is designed and structured to direct and manage the multitude of tasks and activities necessary to achieve the commander's desired effects on a target.

The FECC consists of a lethal effects section, a targeting/counterfire section and a non-lethal effects cell (NLEC). The FECC's purpose is to plan and synchronize full-spectrum fires in support of IBCT operations. Figure 2 outlines the organization of the FECC as well as the FSE and FIST. The FECC is led and directed by the effects coordinator (ECOORD) for the IBCT. The direct support (DS) FA battalion (1-37 FA) commander serves as the IBCT's ECOORD. (The standard tactical mission of "DS" is used, although 1-37 FA is organic to the brigade.) The relationship between the brigade commander and the ECOORD is identical to that of the more traditional brigade commander and his fire support coordinator (FSCOORD).

Through his deputy effects coordinator (DECOORD), the ECOORD plans, coordinates and orchestrates lethal and non-lethal fires against targets to support the commander's intent for the operation. The DECOORD is the full-time liaison to the brigade TOC and, as such, represents the ECOORD when he is unavailable. The DECOORD and the FECC are assigned to the Headquarters and Headquarters Company, 3d Brigade.

The key difference between a brigade FSE and the FECC is the increased level of coordination and integration required because of the additional assets and capabilities available to the IBCT. The



Legend:

AFATDS = Advanced Field Artillery Tactical Data System
ASIP = Advanced System Improvement Program
BCBST = Brigade Combat Battle Simulation Training
BCT = Brigade Combat Team
Bde = Brigade
CAS = Close Air Support
COMMEX = Communications Exercise
Co STX = Company Situational Training Exercise
CPX = Command Post Exercise
EPLRS = Enhanced Position Location Reporting System
EX = Exercise
FBCB² = Force XXI Battle Command Brigade and Below
FIST-V = Fire Support Team Vehicle
HMMWV = High-Mobility Multipurpose Wheeled Vehicle
HTU = Handheld Terminal Unit
IO = Information Operations
JRTC = Joint Readiness Training Center, Fort Polk, Louisiana
Kw = Kilowatt
MORTEP = Mortar Training and Evaluation Program
MOUT = Military Operations in Urbanized Terrain
NET = New Equipment Training
RWS = Rigid Wall Shelter
SIMEX = Simulation Exercise
SLTC = Senior Leaders Training Course
TF/Sqd = Task Force/Squadron
T/I = Turn in
TLC = Tactical Leaders Course
TOC = Tactical Operations Center

Figure 1: Fire Support Transformation

lethal effects section works closely with the NLEC to synchronize planning and execution.

One of the FECC's most important contributions is coordinating for and directing the activities of the IBCT's radars. The FA battalion has one each AN/TPQ-36 and AN/TPQ-37 Firefinder radar. Through the counterfire/targeting section, the FECC employs the radars and any attached or augmenting counterfire radars.

Careful coordination is the key to employing the IBCT radars. The counterfire/targeting section and the FA battalion S2 section coordinate in detail via AFATDS, and the FA battalion S2 section coordinates with the brigade S2 section via the all-source analysis system (ASAS). The FA battalion S2 is a significant contributor to proactive counterfire operations as his main task is to help locate enemy indirect fire assets through predictive templating and then transmit his analysis to the brigade S2 via ASAS and the FECC's counterfire/targeting section via AFATDS. Based on the battalion S2's analysis of enemy fire support systems, the brigade S2 will develop the intelligence collection plan and task intelligence, surveillance and reconnaissance (ISR) assets to detect, locate and target enemy fire support systems.

ISR assets, such as the reconnaissance, surveillance and target acquisition (RSTA) squadron's tactical unmanned aerial vehicle (TUAV) or ground sensors, can be directed to find and target enemy mortar or artillery systems before they can engage IBCT units. Also the RSTA squadron's three reconnaissance troops and their associated FISTs can target enemy indirect assets, as the mission requires.

Once enemy assets are detected, the FECC manages the employment of FA fires to attack enemy targets or tactical air to attack targets outside the range of artillery.

In a reactive role, the counterfire/targeting section, with input from the brigade S2 and FA battalion S2 sections, establishes the necessary radar zones, such as call-for-fire-zones (CFFZs) and critical friendly zones (CFZs). As a result of target acquisitions, the FECC transmits fire mission requests to the DS FA battalion or a reinforcing FA unit. Another option is for the radar to establish a digital quickfire channel with a delivery unit.

The addition of the NLEC is the most significant difference between an FECC and a traditional brigade FSE. The NLEC is embedded in the FECC structure and plans and coordinates non-lethal effects in support of the IBCT. The NLEC consists of planners for information operations (IO), civil affairs (CA), electronic attack, tactical intelligence, psychological operations (PSYOP), legal and public affairs. The IO officer supervises the NLEC and ensures non-lethal operations are integrated into the maneuver plan.

The brigade is the lowest level that plans and coordinates non-lethal effects; there are no non-lethal planners at the battalion/squadron level and below. For executing non-lethal targeting, assets such as CA and PSYOP teams can augment brigade operations, as required.

FSE and FIST. Each FSE is organic to a headquarters and headquarters company (or troop) in its infantry battalions or RSTA squadron. The FSE consists of a four-man team that provides its maneuver battalion/squadron a fire support coordination capability in its headquarters.

Level	Element	Personnel	Key Equipment
FECC	Lethal Effects Section	Bde DECOORD (13A 0-4) Bde FSNCO (13F40) 2 System Oper/Drivers (13F10) Effects Battle Captain (13A O-3) Effects NCO (13F30)	1 M1998 1M1097 w/ 2 AFATDS
	Counterfire/ Targeting Section	Effects Battle Captain 13A O-3) Counterfire Officer (131A CW2) Targeting Officer (131A CW2) Targeting NCO (13F30) 2 System Oper/Drivers (13F10)	1 M1097 w/ 2 AFATDS
	Bde TAC	AECOORD (13A O-3) Effects NCO (13F30)	1 M1038 w/ 1 AFATDS
	Non-Lethal Cell	IO Officer (30A O-4) CA Ops Officer (39C 0-4) Legal Affairs Officer (55A O-4) Legal NCO (71D30) Tac Intel Officer (30A35 O-3) Electronic Attack Officer (35G O-30) PSYOP NCO (37F30)	M998 w/ MCS
FSE	RSTA Sqn FSE	Sqn FSO (13A O-3) Sqn FSNCO (13F40) 2 Drivers (13F10)	1 M1097 w/ 1 AFATDS 1 M998 w/ HTU, FBCB^2, EPLRS
	Inf Bn FSE	Bn FSO (13A O-3) Bn FSNCO (13F40) 2 Drivers (13F10)	1 M1097 w/ 1 AFATDS 1 M998 w/ HTU, FBCB^2, EPLRS 4 x 120-mm and 4 x 81-mm Mortars
FIST	RSTA Troop FIST	Troop FSO (13A O-2) Troop FSNCO (13F30) Driver (13F10)	1 FSV w/ HTU, G/VLLD, EPLRS, FBCB^2 2 x 120-mm Mortars
	Inf Co FIST	Co FSO (13A O-2) Co FSNCO (13F30) Driver (13F10)	1 FSV w/ HTU, G/VLLD, EPLRS, FBCB^2 2 x 60-mm and 2 x 81-mm Mortars
	AT Co FIST	Co FSO (13A O2) Co FSNCO (13F30) Driver (13F10)	1 FSV w/ HTU, G/VLLD, EPLRS, FBCB^2

Legend:

AECOORD = Assistant Effects Coordinator
AT = Anti-Tank
CA = Civil Affairs
DECOORD = Deputy Effects Coordinator
FSE = Fire Support Element
FSNCO = Fire Support NCO
FSO = Fire Support Office
FSV = Fire Support Vehicle
G/VLLD = Ground/Vehicular Laser Locator Designator
MCS = Maneuver Control System
PSYOP = Psychological Operations
RSTA = Reconnaissance, Surveillance and Target Acquisition
TAC = Tactical Assault Command Post

Figure 2: Fire Support Organization in the IBCT

The battalion/squadron fire support officer (FSO) plans and executes fires and effects in support of the maneuver commander's intent and concept of the operation. In addition, the FSO could be charged with integrating any attached non-lethal assets that have been task organized from brigade.

The Air Force tactical air control party (TACP), consisting of an air liaison officer (ALO) and enlisted tactical air controllers (ETACs), plugs into each maneuver battalion/squadron headquarters alongside the FSE. The TACP requests, coordinates and controls close air support (CAS).

The ETACs have the added responsibility of terminal attack control. This is a key planning consideration as the IBCT reduced its number of trained fire support personnel with this skill. There are no FOs in the brigade fire support structure to perform terminal control procedures. Furthermore, the 13F20 Fire Support Specialist has been eliminated from the IBCT structure. Altogether, this places greater emphasis on 13F10 training and maneuver leader proficiency related to fire support planning and execution.

The FSEs have subordinate FISTs that support each infantry company, ground reconnaissance troop and the brigade's anti-tank company. Each three-man FIST provides its maneuver company/troop a fire support coordination and terminal control capability, which emphasizes precision target acquisition to engage targets with lethal fires and assess the effects.

A key responsibility for the battalion/squadron and company/troop FSOs is advising their respective commanders on the positioning and use of mortars. Each infantry company has two 60-mm and two 81-mm mortars; the infantry battalion has four 120-mm and four 81-mm mortars; and each reconnaissance troop has two 120-mm mortars. The infantry units use the "arms room" approach to deploy their mortars. As the mission requires, units will deploy with a combination of 120-mm, 60-mm and 81-mm mortars.

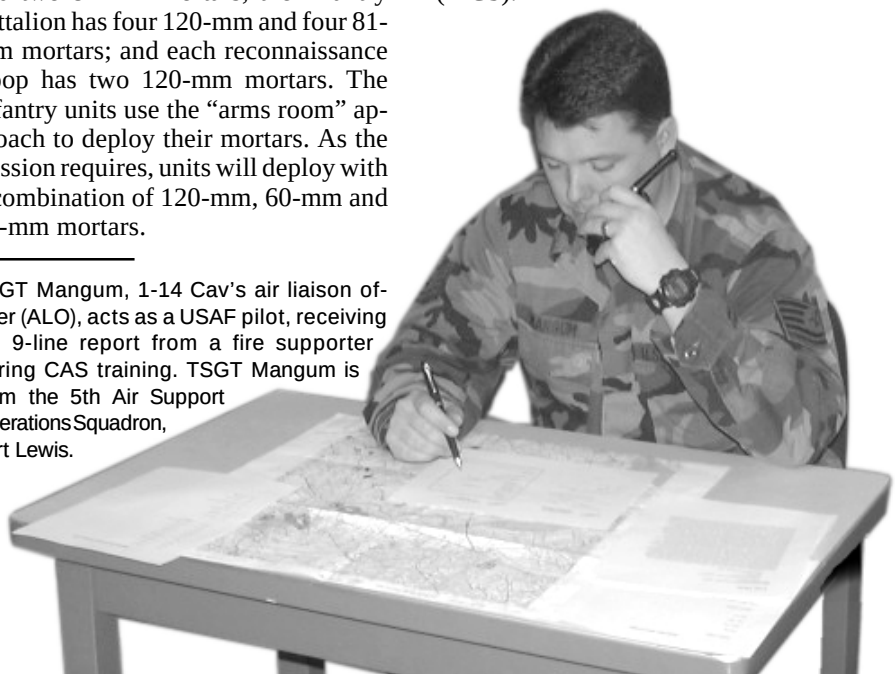
Mortars have become more critical to the indirect firepower organic to the IBCT with the reduction of its howitzers and the likely dispersion of units on the ground. The IBCT's DS FA battalion has 12 howitzers (vice 18) under the brigade's initial FA organization.

Equipping Fire Support for the IBCT. The equipment phase of the transformation process began in earnest during the Third Quarter of FY00. From May until 15 September 2000, fire supporters turned-in excess equipment or laterally transferred equipment to their maneuver units. Simultaneously, fire supporters started fielding and training on new equipment.

The FECC. Fielding and new equipment training (NET) began in July 2000. The FECC (lethal) fielded two AFATDS systems with the latest software version, as did the targeting/counterfire section. The brigade tactical command post (TAC), if deployed, also has AFATDS. The systems are configured in two M1097 rigid-wall shelter (RWS) high-mobility multi-purpose wheeled vehicles (HMMWVs) and one M1038 HMMWV (TAC vehicle).

The lethal effects section and the targeting/counterfire section each has two systems in its vehicles, and the TAC vehicle has one system. Each AFATDS is equipped with two single-channel ground and airborne radio systems (SINCGARS) advanced system improvement program (ASIP) for voice and digital communications.

The FECC setup in the field is an impressive site as it occupies a footprint nearly the size of the DS FA battalion TOC. The NLEC plugs into the brigade TOC with one M988 HMMWV equipped with the maneuver control system (MCS).



TSGT Mangum, 1-14 Cav's air liaison officer (ALO), acts as a USAF pilot, receiving his 9-line report from a fire supporter during CAS training. TSGT Mangum is from the 5th Air Support Operations Squadron, Fort Lewis.

FSE and FIST. Currently, the FIST is operating out of standard M998 and M1025 HMMWVs. As shown in Figure 2, each FIST in the IBCT will operate from a light armored vehicle (LAV) common platform equipped as a fire support vehicle (FSV). A Striker-like mission equipment package will be integrated onto a common platform and will have a target acquisition/communications suite and the ability to designate for laser-guided munitions for ground and air platforms. Each FSV also will have a ground/vehicular laser locator designator (G/VLLD), HTU, FBCB^2 and EPLRS.

Operating a LAV common platform will offer many challenges to a FIST. With only a crew of three, each FIST will have to maintain a vehicle large enough for a squad of infantry soldiers while providing fire support planning and execution to its maneuver company/troop.

Training. The IBCT centralized training task lists (CTTLs) for the FECC and FSE provide the framework for fire support training during the transformation process. The FECC CTTL includes such tasks as Participate in parallel and collaborative military decision making; Participate in the targeting process; Synchronize non-lethal fires; and Manage counterfire and targeting section operations.

A series of Senior Leaders Training Courses (SLTCs) held during the Third and Fourth Quarters of FY00 laid the initial groundwork for training. These SLTCs provided fire supporters the opportunity to better understand how the IBCT will organize and fight in the future.

The IBCT is using a building-block approach to training its maneuver units. Beginning with individual training, the IBCT gradually will train each succeeding level and then will culminate its collective training at the Arrowhead Phoenix exercise at Yakima Training Center, Washington. This will be the capstone exercise just before the certification exercise at the Joint Readiness Training Center (JRTC), Fort Polk, Louisiana, sometime in late FY02 or early FY03. Based on the LAV fielding and NET, the IBCT training schedule and the timing of the certification exercise and JRTC rotation will be adjusted.

The IBCT approach to fire support training is to centralize and coordinate most of the FIST-specific training at the FECC while supporting the company/troop situational training exercise (STX) and maneuver battalion/squadron training at every opportunity. By centraliz-

The FECC at Yakima Training Center, Washington, in October.

ing FIST training, the IBCT ensures the IBCT FISTs train to a common standard.

The FECC has a number of training objectives planned for FIST and FSEs throughout FY01 that are designed to maintain traditional FIST skills and improve the skills necessary to successfully integrate with maneuver in accordance with the IBCT O&O. The following is a brief description of the major training events planned for fire supporters. Underlying these events is the DS FA battalion's weekly digital sustainment program, which includes all fire supporters, the FA battalion fire direction center (FDC), 1-37 FA firing units and maneuver elements, the latter when possible.

Also, the FECC is leading the development of updated tactical standing operating procedures (TACSOP) for fire supporters. Combining elements of the current TACSOP, this updated TACSOP incorporates new TTP as a result of operating in the IBCT.

Maneuver Shooter Program. Increasing maneuver understanding of FIST operations and call-for-fire procedures has become more important with the loss of FOs at the platoon level. This program is divided into three phases and is aimed at platoon and squad leaders.

The first two phases encompass classroom training and time with the guard unit armory device, full-crew interactive simulation trainer (GUARDFIST II) and the training set fire observation (TSFO) trainer. The third phase (live fire) requires each leader to call-for-fire using either mortars or FA.

Each battalion FSE manages the program with coordination for the third phase done by the FECC.

Mastering Mortars. FISTs must regularly train with their mortars to improve their understanding of mortar positioning and employment. Each FSE then schedules the mortar evaluation for its mortar section. The FECC coordinates for mortar training resources and evaluators, as required.

FIST Procedures in an Urban Environment. When deployed, the IBCT's area of responsibility likely will include urban environments. Using the military operations in urbanized terrain (MOUT) site at Fort Lewis and surrounding cities, this two-day exercise improves the FISTs' understanding of selecting observation posts (OPs) and employing indirect fires in a MOUT environment.

CAS and Attack Aviation Employment. Planning and controlling CAS and attack aviation assets are vital skills. This three-day event includes classroom, board and field training with terminal control of both CAS and attack aviation platforms.

IO Seminar. The focus of this two-day seminar is to teach fire supporters the capabilities and limitations of each nonlethal asset the IBCT is authorized or could receive. Training includes lessons learned from recent stability and support operations and practical exercises.

FIST Certification. This semi-annual event is the capstone exercise for the FISTs, incorporating all previous FIST training. The focus is on the FIST collective tasks during selection of OPs in an urban environment, surveillance of named areas of interest (NAIs), terminal control of CAS and (or) attack aviation and call-for-fire procedures.

Brigade Command Post Exercises (CPXs). The CPXs will focus the brigade TOC sections on the military decision-making process (MDMP) in a digital environment. During the CPXs, the FECC will integrate the counterfire/targeting section training with the brigade and FA battalion S2 sections and practice proactive and reactive counterfire procedures. Also, the CPXs will focus lethal and non-lethal coordination and synchronization as the brigade develops operation orders. These exercises are expected to occur quarterly as the IBCT ramps up for a rotation at the JRTC.

Fire supporters in the IBCT have been working hard to re-organize and prepare for IBCT operations. The operational tempo continues to be high as we field new equipment and train on events moving toward our JRTC rotation. Our goal is to produce competent fire support organizations that can provide timely, accurate lethal and non-lethal effects for the IBCT.

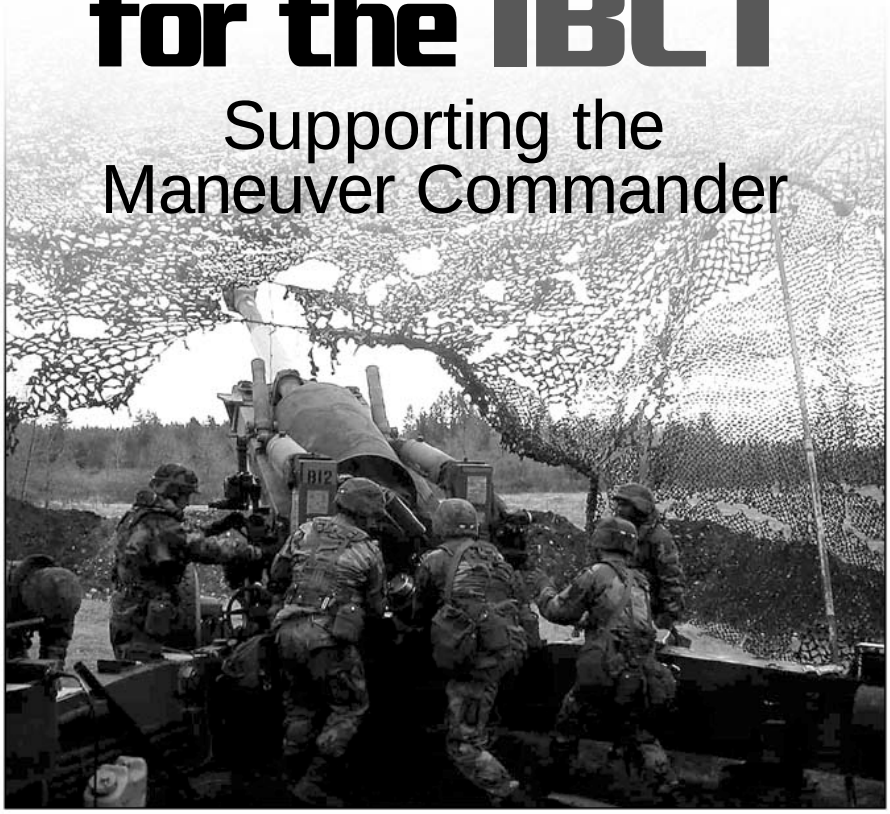
The transformation to a medium-sized force capable of worldwide deployment in 96 hours continues to be an exciting endeavor. IBCT fire supporters are proud to be leading the Field Artillery in this transformation process and look forward to the many challenges that lay before us.

Lieutenant Colonel Henry S. (Skip) Larsen III commands the 1st Battalion, 37th Field Artillery, part of the 3d Initial Brigade Combat Team, 2d Infantry Division at Fort Lewis, Washington. His previous assignments include serving as the Chief of the Policy and Strategy Division of US Southern Command, Miami, Florida; S3 for the 17th Field Artillery Brigade and Executive Officer for the 3d Battalion, 18th Field Artillery, also in the 17th Brigade, III Corps Artillery, Fort Sill, Oklahoma; and Chief of Division Plans for the 2d Infantry Division, Korea. He commanded B Battery, 3d Battalion, 82d Field Artillery, 1st Cavalry Division, during Operations Desert Shield and Storm in the Persian Gulf.

Major Michael T. Walsh is the Deputy Effects Coordinator (DECOORD) for the IBCT at Fort Lewis. In his previous assignments, he served as a Systems Integrator for the Fire Support Command and Control Systems in the Force Development Division of the Office of the Deputy Chief of Staff for Operations and Plans at the Pentagon; and Commander of Headquarters and Headquarters Battery for the 4th Infantry Division (Mechanized) Artillery, Commander of B Battery, 3d Battalion, 16th Field Artillery and Task Force Fire Support Officer, all in the 4th Division, Fort Hood, Texas. He is a graduate of the British Joint Services Command and Staff College, Bracknell, England, and holds master's degrees in Defence Studies from the Kings college of London and in Business Administration from Troy State University, Alabama.

Transforming the FA Battalion for the IBCT

Supporting the Maneuver Commander



B Battery, 1st Battalion, 37th Field Artillery

By Lieutenant Colonel Henry S. Larsen III
and Major William I. Fox III

There are many questions about the transformation and operations of the first FA battalion in the Army's first Initial Brigade Combat Team (IBCT)—the 3d Brigade, 2d Infantry Division at Fort Lewis, Washington—that will have to be answered over time as the IBCT evolves. The IBCT with its organic FA, 1st Battalion, 37th Field Artillery (1-37 FA), is maintaining a high operational tempo, fielding equipment and training to realize the Chief of Staff of the Army's vision for the initial medium brigade.

This article outlines what 1-37 FA's mission is; how the battalion is organizing, equipping and training; and how it will operate as part of the IBCT. Ultimately, our preparations are to execute FA operations during the IBCT's rotation at the Joint Readiness Center (JRTC), Fort Polk, Louisiana, in late FY02 or early FY03 and in any real-world missions that may follow.

Mission. 1-37 FA is leaning forward and on its way to accomplishing its new mission and helping the Chief of Staff of the Army achieve his vision. The Chief's vision is for the IBCT to deploy within 96 hours of the first aircraft with wheels up to conduct operations ranging from a small-scale contingency (SSC) to a major theater war (MTW). The IBCT is optimized for low- to mid-level SSCs but will deploy to MTWs with augmentation.

Within that vision, 1-37 FA's mission is to deploy rapidly by air to a designated contingency area of operations and provide direct support (DS) artillery fires and synchronize fires and effects for the IBCT. (Although 1-37 FA is organic to the IBCT, "direct support" is the FA standard tactical mission that most closely describes our mission.) The IBCT is designed for a 50-by-50-kilometer area of operations, depending on the mission, enemy, terrain, troops and the time and number of civilians on the battlefield (METT-TC).

The battalion must be ready to deploy as a whole but also to tailor its force deployments. As outlined in the "IBCT Organizational and Operational Concept" (O&O) document, the firing batteries and other selected FA battalion assets may be deployed as a mission ready battery (MRB) within a brigade force package. During the early entry phase of operations, the situation could dictate the deployment of an initial ready battery (IRB).

When the brigade conducts distributed operations in an expanded area of operations, the firing batteries may move and position with the maneuver battalions. Distributed operations and METT-TC considerations may warrant the use of firebases and artillery raids.

The brigade's organic cannon battalion provides counterfire and close support fires in all environments but with an emphasis on complex terrain and urban areas to support dismounted infantry, the primary way the brigade will fight. The delivery of smoke, illumination, high-angle fires and howitzer direct fires are effective means of artillery support for maneuver forces in urban areas. With coordination through the fires and effects coordination cell (FECC) at the IBCT's command post, the FA battalion capitalizes on the brigade's integrated collection assets to execute both proactive and reactive counterfire operations.

Organization. The battalion has been reorganizing and conducting new equipment training (NET) to transition from an M109A6 (Paladin) battalion to an M198 (155-mm towed) battalion. In 1-37 FA, each of the three batteries has four howitzers (3x4), unlike the 3x6 organization of other M198 battalions. In addition to the three firing batteries, the FA battalion consists of a headquarters and service battery (HSB) with a medical platoon and a target acquisition platoon (TAP), the latter consisting of two Q-36 Firefinder radars (one Q-36 in lieu of a Q-37), a meteorological section and a survey team.

In September 2000, the battalion inactivated the headquarters and headquarters battery (HHB) and service battery and activated the HSB as part of the reorganization. With virtually no organ-

ic logistics assets under the new modified table of organization and equipment (MTOE), 1-37 FA receives most of its combat service support (CSS) from the brigade support battalion (BSB).

Additionally, under the IBCT MTOE, the battalion fire support elements (FSEs) and personnel are assigned to the maneuver battalions and the reconnaissance, surveillance and target acquisition (RSTA) squadron, while the IBCT FECC is assigned to headquarters and headquarters company (HHC) of the 3d Brigade, which includes the functions of the brigade FSE, among others. The transfer and reassignment of fire support personnel and their equipment was complete by 15 September 2000, the official IBCT effective date. (See the article "Transforming Fire Support for the IBCT: Supporting the Maneuver Commander" in this edition.)

The Interim BCT is scheduled for fielding after the two initial brigades, tentatively in FY03, and will include the third FA battalion to undergo transformation.

As detailed in the O&O, the organization and functions of the Initial FA Battalion as compared to the Interim FA Battalion are the same, with two exceptions. The howitzers in the firing batteries will change, and the TAP will have the Q-47 Firefinder radar, which will replace the Q-37 radar.

Each firing battery in the Initial FA Battalion has four M198 howitzers. Each howitzer has a 10-man section: the section chief, gunner, ammunition team chief, assistant gunner, driver and five Cannoneers—all of whom are necessary to employ and operate the eight-ton indirect fire weapon system.

The M198 has a maximum effective range of 30 kilometers with the rocket-assisted projectile (RAP) and 18.1 kilometers with high-explosive (HE) rounds; it provides the IBCT maneuver forces lethal, air-deployable, 155-mm artillery.

The Interim FA Battalion will have the developmental M777 lightweight 155-mm towed howitzer (LW 155) with the towed artillery digitization (TAD) system that will be fielded starting in FY05. The LW 155 is more deployable, weighing 4.5 tons, about half what the M198 weighs, and has a six-man crew. The LW 155 will attain the same ranges as the M198 and fire all known and developmental 155-mm munitions. TAD gives the LW 155 Paladin-like capabilities, significantly increasing its responsiveness to maneuver forces. With TAD, the howitzer has on-board self-location and a fire control system.

The TAP's Q-47 Firefinder radar in the Interim FA Battalion will increase the battalion's target acquisition range significantly. The Q-37 Firefinder has a maximum range of 50 kilometers for cannons and rockets while the Q-47 will detect cannons out to 60 kilometers, rockets to 100 kilometers and missiles to 300 kilometers.

Training and Equipment. 1-37 FA began fielding equipment and training on it in June 2000 and will continue fielding through June 2001. Training in the brigade is based on a building-block approach, starting with the individual soldier and working sequentially through sections, platoons, batteries, battalions and then brigade collective training. We currently are training at the battery level.

In August, the battalion leaders attended the Tactical Leader's Course (TLC), one of the brigade-wide series of TLCs. The FA TLC helped the battalion better understand how to employ FA assets in urban and complex terrain, in distributed operations and in operations across the full spectrum of conflict.

The simulation portion of the TLC focused on the FA battalion military decision-making process (MDMP) and exercised the entire FA chain from the brigade FECC to the FA batteries. The training used a Janus tactical scenario in the Fort Lewis Battle Simulation Center.

1-37 FA's priority to date has been fielding new equipment and conducting the subsequent new equipment training sessions (NETs) in accordance with the centralized task training list (CTTL). The Training and Doctrine Command (TRADOC) developed the IBCT CTTL for training during transformation. The FA portion of the CTTL outlines the minimum tasks the battalion must train to proficiency. These tasks are based on expectations for future IBCT operations and apply across the spectrum of conflict.

The CTTL will serve as a model to help the battalion develop a mission-essential task list (METL) to support our operational mission. Arguably, these CTTL tasks will be part of the METL when the battalion receives its operational mission after the IBCT JRTC rotation. The IBCT FA battalion CTTL tasks are Deploy/redeploy by air; Control battalion moves; Conduct counterfire operations; Control the delivery of fires; and Coordinate and monitor CSS operations.

As we train the CTTL in preparation for future contingency operations, tactical standing operating procedures (TACSOP) development and revision will be critical to the battalion's success. The change from the M109A6 to the M198 howitzer made most battalion SOPs obsolete. Quarterly SOP revision will be the norm, not the exception, as we continue to field new equipment and refine our operations for the IBCT.

In addition to the SOPs, 1-37 FA revised its safety certification program and trained on the cannon artillery tables, which were used during section certification in October at the Yakima Training Center, Washington. The artillery tables are taken from *Army Training and Evaluation Program (ARTEP) 6-115 Mission Training Plan (MTP) for the Field Artillery Cannon Battalion Command and Staff Section, Headquarters and Headquarters Battery, and Service Battery* and coincide with the maneuver tables. The tables are designed to develop realistic, effective and standardized training and remain the base line for all section, battery and battalion training during the transformation.

Key items yet to be fielded in 1-37 FA are Force XXI battle command brigade and below (FBCB^2), the enhanced position location-reporting system (EPLRS), medium tactical vehicle (MTV) and a digital tactical operations center (TOC). The figure on Page 14 depicts the fielding of our new systems as correlated with the training strategy to integrate the systems into battalion operations. The fielding and training culminates with the first rotation at the JRTC. The following are descriptions of some of our new systems' capabilities.

Gun Laying and Positioning System (GLPS). This is the newly fielded tripod-mounted positioning and orienting device in the firing batteries. The GLPS provides accurate directional control through a north-seeking gyroscope and gun position location through a laser rangefinder (LRF) and interfaces with the precision lightweight global positioning receiver (PLGR). With an azimuth determined by the gyro, a distance measurement (range) from the LRF and a position location from the PLGR, the firing battery can establish its own survey control and firing capability autonomously from the battalion position without using the position and azimuth determining system (PADS). A PADS system is still necessary to establish common survey among all three firing

units, the radar sections and, as the situation allows, the brigade mortars.

M198 Howitzer. The battalion fielded 12 M198 (155-mm towed) howitzers (3x4) in July 2000. A mobile training team (MTT) from the Cannon Division of the Gunnery Department at the Field Artillery School, Fort Sill, Oklahoma, conducted a three-week M198 NET in August.

An additional MTT from Fort Sill provided a three-week (120-hour) U6 Artillery Mechanics Course to 13 1-37 FA soldiers. The U6 course produced an additional skill identifier (ASI) for our soldiers, allowing them to work on the howitzers at the section level.

Along with the M198, each howitzer section fielded the gun display unit (GDU) and M94 Chronograph.

Advanced FA Tactical Data System (AFATDS). AFATDS is fielded in the FECC, maneuver battalion FSEs, FA battalion fire direction center (FDC), FA battalion operations, FA battalion S2 and the firing battery FDCs and battery operations centers (BOCs).

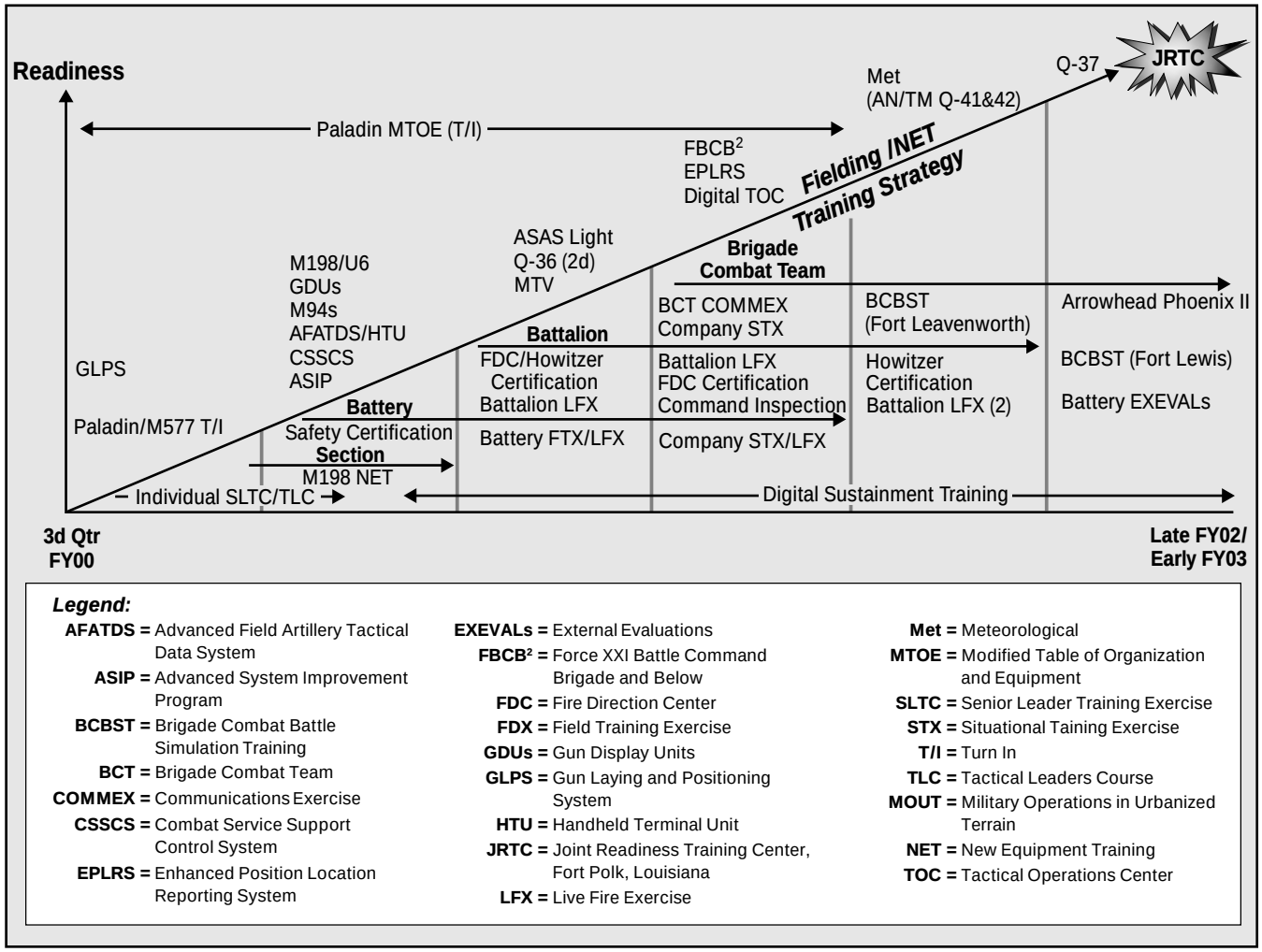
The AFATDS NET consisted of a 120 hours of training followed by an end-of-course examination. After the NET, the battalion and personnel from the FECC and maneuver FSEs conducted a digital AFATDS validation exercise to test the collective artillery chain's use of AFATDS.

The battalion conducted its final phase of AFATDS NET in the deployment to the Yakima Training Center. There, 1-37 FA focused on the CTTL task of "Delivering indirect fires," using AFATDS and handheld terminal units (HTUs). The battalion worked the digital links from sensor-to-shooter (Q-36 through the FECC to the FA battalion) and developed tactics, techniques and procedures (TTP) for its AFATDS SOP.

Single-Channel Ground and Airborne Radio System (SINCGARS) Advanced System Improvement Program (ASIP). Throughout the two-week ASIP NET, the battalion's communications personnel (31U) trained in unit maintenance through a 24-hour subcourse; key NCOs received a 32-hour ASIP Assistant Instructor Course; battalion and battery FDC personnel received a 16-hour Net Control Station (NCS) Subcourse; and soldiers and leaders throughout the battalion attended an eight-hour Operators Course. The ASIP system replaced all SINCGARS and was used during the Yakima Training Center rotation in October.

FBCB². This is the primary digital system for situational awareness (SA) and command and control (C^2) throughout the brigade. FBCB², a main Army battle command system (ABCS) component, consists of software and display screens to provide real-time SA and C^2 to combat, combat support and CSS elements down to the individual soldier. It provides automated support in the form of orders, operational graphics, unit status reports and message traffic.

In the FA battalion, FBCB² will be networked through EPLRS. EPLRS will provide secure, near-real-time data com-



Legend:

AFATDS = Advanced Field Artillery Tactical Data System
ASIP = Advanced System Improvement Program
BCBST = Brigade Combat Battle Simulation Training
BCT = Brigade Combat Team
COMMEX = Communications Exercise
CSSCS = Combat Service Support Control System
EPLRS = Enhanced Position Location Reporting System
EXEVALs = External Evaluations
FBCB² = Force XXI Battle Command Brigade and Below
FDC = Fire Direction Center
FDX = Field Training Exercise
GDUs = Gun Display Units
GLPS = Gun Laying and Positioning System
HTU = Handheld Terminal Unit
JRTC = Joint Readiness Training Center, Fort Polk, Louisiana
LFX = Live Fire Exercise
Met = Meteorological
MTOE = Modified Table of Organization and Equipment
SLTC = Senior Leader Training Exercise
STX = Situational Taining Exercise
T/I = Turn In
TLC = Tactical Leaders Course
MOUT = Military Operations in Urbanized Terrain
NET = New Equipment Training
TOC = Tactical Operations Center

Figure 1: Glide Path for FA Battalion Transformation

munications, position-location reporting, and navigation and identification services between elements of the Army tactical command and control system (ATCCS). In addition to FBCB^2's other support, the FA battalion will use FBCB^2 to track the maintenance status of key assets, move resupply vehicles and verify positioning guidance for batteries in relation to maneuver units.

During the brigade's FBCB^2 NET, two NCOs from the battalion were certified as master trainers and six personnel, both officers and NCOs, were certified as part of the "expert core" of instructors in the brigade. Each of these courses had 80 hours of instruction. At the unit level, battalion instructors allow for flexibility in training the battalion operators during the 40-hour course as well as during future sustainment training. Battalion leaders also received an eight-hour course on the system and will receive refresher training, as needed.

Operations. Although supporting the first IBCT is certainly a unique mission, 1-37 FA remains guided by *FM 6-20-1 TTP for the Field Artillery Cannon Battalion* and *FM 6-50 TTP for the Cannon Battery*. Two operations are especially challenging under the IBCT: counterfire and CSS operations.

Counterfire Operations. 1-37 FA provides both proactive and reactive counterfire. Given that the IBCT is designed for its infantry to fight dismounted, proactive counterfire becomes an especially critical task. The FA battalion is an invaluable asset for the FECC's counterfire cell during planning and for the intelligence surveillance and reconnaissance (ISR) integration efforts led by the brigade S2.

The FA battalion S2 is a key contributor to the brigade S2's patterns and trends analysis process. The FA battalion S2 section continues to track and maintain suspected enemy artillery locations through predictive templating. The S2 communicates with the brigade S2 via the all-source analysis system (ASAS) and the FECC's counterfire cell via AFATDS to provide information for proactive counterfire operations.

As outlined in the FA battalion intelligence section CTTL, the S2 is part of the brigade targeting team and plays a major role in answering artillery-related intelligence requirements. Through analysis of the enemy's indirect fire capabilities, the S2 helps the brigade S2 propose high-payoff targets (HPTs) and named areas of interests (NAIs) to answer artillery priority intelligence requirements (PIRs). Additionally, the FA S2 helps the FECC's targeting and counterfire cell and the brigade S2 establish target acquisition radar zones to cover NAIs. Under our new MTOE, the 1-37 FA is authorized and has a Military Intelligence captain as the battalion S2.

Critical to the successful execution of the counterfire mission, the TAP can acquire threat mortar, artillery and rocket systems to protect the BCT. The TAP's acquisitions will enable the FECC to control the brigade's reactive counterfire operations using the artillery delivery systems in the FA battalion or any supporting artillery.

The TAP also generates artillery target intelligence critical to the brigade ISR plan. The TAP's counterfire capability in 1-37 FA historically has been at the FA brigade or division artillery level.

The radar sections in the TAP are structured to deploy as part of the platoon or independently as an element of a task-organized force. Following deployment to a theater of operations the FECC will control the tactical employment of the TAP radars.

The FA battalion S3 controls the employment of the meteorological section and survey team in coordination with the TAP leader. The survey team has only one PADS. However, the firing batteries can establish position and directional control using the PLGR/GLPS or the hasty survey capabilities within the HTU without always having to rely on the battalion's PADS.

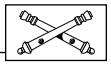
With the Met and radar sections in the TAP, the battalion can meet all five of the requirements for accurate, predicted fire with its organic assets. The BCT's fire supporters assigned to the maneuver battalions and RSTA squadron provide accurate target locations in their observed fire role.

CSS. With virtually no organic CSS assets in the battalion, coordinating and monitoring CSS operations will be a major focal point for the battalion executive officer (XO) through the battalion's CSS section in the brigade support area (BSA). Under the FA battalion MTOE, the CSS section consists of the S1 section, the S4 section and the battalion ammunition officer and NCO. The CSS section is equipped with the CSS computer system (CSSCS) and tracks all logistics and maintenance requirements for the FA battalion.

The battalion ammunition officer (BAO) and his one NCO project and coordinate Class V support for the battalion, based on guidance from the battalion XO and S3. Under the new MTOE, HSB is no longer authorized an ammunition platoon and, thus, the BAO requests and facilitates the transportation of ammunition from the BSA to the firing batteries in assets provided by the BSB.

Conclusion. The battalion recently deployed for training to the Yakima Training Center—including deploying a firing battery by air on a C-5 airframe from McChord Airbase, Washington, to the Yakima Municipal Airport, a key CTTL and O&O task. In addition, 1-37 FA also live fired its new howitzers during the training. Accuracy, timeliness and synchronization of fires and effects remain the "bread and butter" of the battalion.

1-37 FA has invested its energy and resources in reorganizing, fielding and training on new equipment, and developing internal systems to train and sustain the battalion's proficiency on its mission tasks through transformation and future deployments. Transformation is exciting and the right azimuth for fires and effects in support of the 21st century force.



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BFIST
A Sight for Sore Eyes

By Lieutenant Colonel James E. Lackey,
Captain Dean J. Case II and
First Lieutenant George L. Woods

As our Army moves toward a new vision for greater capabilities in the form of the Objective Force, we are simultaneously enhancing the existing force to ensure we retain an overwhelming warfighting edge against a range of potential adversaries. One aspect of those improvements for our mechanized force is a new platform for fire support that provides accurate target location on the move as well as greater survivability and mobility consistent with the supported maneuver force. For an entire generation of 13F Fire Supporters who have worked tirelessly on the old M981 fire support vehicle (FIST-V), the new Bradley fire support vehicle (BFIST) is truly a sight for sore eyes.

BFIST gives the FIST the same mobility, signature and survivability as that of the supported maneuver units. Additionally, BFIST can observe indirect fire while on the move and employ direct fire systems that can make a difference not only in self-protection, but also in supporting the maneuver force.

BFIST is a point-and-shoot and point-and-lase system for fire supporters. Its features are dramatic improvements over the FIST-V and equate to new capabilities to derive accurate target location at the push of a button—no targeting head to erect, no initialization of targeting systems each time you stop, no additional night sight to install and no challenge getting the ten-digit grid into the digital system.

This article provides an overview of the BFIST system recently fielded first in the 3d Infantry Division (Mechanized) at Fort Stewart, Georgia, and the lessons learned during BFIST New Equipment Training (NET) and Rotation 01-02 at the National Training Center (NTC), Fort Irwin, California.

Characteristics. The primary difference between the M2A2/M3A2 Bradley and the M7 BFIST is the mission equipment package (MEP) that allows the FIST to search, locate and identify targets, day or night, with a circular error probable (CEP) of less than 50 meters at a range of five kilometers and a CEP of less than 80 meters at a range of 10 kilometers. The MEP consists of five components, as described in Figure 1. All the components are line-replaceable units (LRUs), allowing FIST op-

Photo by SFC Gerald Mitchell, Directorate of Combat Developments, FA School

1. Inertial Navigation System (INS). This component blends global positioning system (GPS) and inertial solutions for vehicle locations, even while on the move.

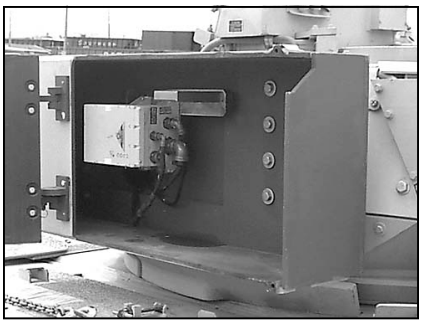
2. Mission Processing Unit (MPU). The BFIST's brain is the MPU. It manages the computers and controls the data flow in the MEP system. Additionally, it provides self-location by performing digital resectioning using the eye-safe laser rangefinder (ELRF) and a known point. (The ELRF is part of the integrated sight unit, or ISU, which is common to both the Bradley and BFIST. The ISU is the primary targeting apparatus for both observed fire and the BFIST's main gun.)

3. Fire Support Station (FSS). This is the primary digital communications link between the BFIST and the fire support net. It consists of a lightweight computer unit (LCU) with forward observer software (FOS), map board, radio interface and fire support operators workstation.

4. Targeting Station Control Panel (TSCP). The TSCP allows the vehicle commander to relay data to the FSS' LCU. It also controls the position determination systems of the BFIST and, as a navigational aid, can store up to 99 waypoints.

5. Ground-Vehicular Laser Locator Designator (G/VLLD). The version of the G/VLLD on the BFIST is the one used for dismounted operations. The ELRF cannot designate targets for precision-guided munitions (PGMs). The G/VLLD, stored in the troop compartment, must be dismounted to designate a target for PGMs.

Figure 1: Five Components of the BFIST Mission Equipment Package (MEP)



Inertial Navigation System (INS)

Mission Processing Unit (MPU)

Photos by Donald Aldea, PM BFIST

Targeting Station Control Panel (TSCP)

erators to replace non-mission capable systems by simply switching out the components.

Operation/Crew Drill. Crew and battle drills for the BFIST for company-level fire supporters are completely new. The BFIST's targeting apparatus, navigation self-location system and communications platform are all linked digitally. Once the fire supporter in the BFIST's turret identifies and lases the target, he only has to press a few buttons to transmit the call-for-fire (CFF) to the shooter.

Fire Support Station (FSS).

Additionally, the BFIST's power-stabilized turret allows the fire supporter to accurately observe targets while the BFIST is moving. This enhances the company FIST's ability to provide the right fires at the right place and right time—while on the move.

The 3d Division Artillery (Div Arty) developed a crew drill for BFIST CFF based on the elements of the CFF combined with the standard Bradley fire commands from *FM 23-1Bradley Gunnery*. See the CFF crew drill in Figure 2.

Once target location is obtained, the target grid is sent to the lightweight computer unit (LCU) where the targeting station operator packages the target description and engagement recommendations. Then he transmits the CFF to the fire support element (FSE). The FSE then sends the cleared CFF to the firing unit.

According to Army training and evaluation program (ARTEP) standards, this process should take 55 seconds; however, division fire supporters have been averaging 20 seconds. The major reduction in the time to complete, transmit and clear a CFF is a direct result of the BFIST's superb ability to communicate digitally.

Gunnery. The biggest challenges associated with fielding the BFIST were related to gunnery. During the fielding, three basic gunnery issues arose. First, because the system is new, no doctrinal base existed for qualifying BFIST crews.

Second, standard Bradley tables are inadequate and inappropriate to train FISTs. The Bradley tables train infantry crews to engage and destroy the enemy with direct fire, including tube-launched optically tracked, wire-guided missiles

1. Vehicle Commander (VC) identifies target: "*Gunner, DPICM [dual-purpose improved conventional munitions], three T-72 [tanks], direction 5000."*

2. Gunner (G) slews turret and identifies target in sight: "*Identified, lasing*."

3. Fire Support Station Operator (FSSO) opens up a call-for-fire (CFF) message on the lightweight computer unit (LCU).

4. VC as the target grid appears on the targeting station control panel (TSCP), he checks the grid: *"Sending to LCU."*

5. FSSO as the target grid appears on CFF message, he checks the grid on the map board and transmits CFF to higher: *"CFF sent."*

Figure 2: BFIST Call-for-Fire (CFF) Crew Drill

(TOW) gunnery and dismounted squad operations. (See Figure 3 for a comparison of M2 Bradley and M7 BFIST tables.)

FISTs need training on mission-essential task list (METL) tasks, including using the BFIST's 25-mm main gun and 7.62-mm coaxial machine gun primarily for self-defense. The BFIST tables need to follow the doctrinal standard for the Bradley closely but replace all Bradley TOW engagements with fire support engagements. The tables need a two-day and two-night fire support engagement and the 25-mm main gun engagement ranges reduced to reflect the defensive nature of the BFIST.

To address these issues, the 3d Div Arty tested and modified tables developed for BFIST crew qualification by the Field Artillery School, Fort Sill, Oklahoma. Should the FA School adopt these modified BFIST crew qualification tables, the tables will be forwarded to the Infantry School at Fort Benning, Georgia, for inclusion in the Bradley gunnery portion of FM 23-1.

The third issue was determining when and how FISTs should conduct BFIST tables. This is the most crucial issue. Each of the division's direct support (DS) FA battalions executed gunnery during their fire supporters' NET. For gunnery sustainment training, courses of action being considered include each battalion task force FSE shoots with its supported maneuver battalion, each DS FA battalion conducts gunnery with its supported brigade combat team (BCT), or the FA conducts gunnery in a consolidated program run by the Div Arty.

Integrated Gunnery. The preferred option would be for each task force FSE to integrate gunnery training with its supported maneuver task force. It provides the most contact with supported units at the lowest planning levels, the task force and company-team. The maneuver battalion provides a range officer-in-charge (OIC), a range safety officer (RSO) and a Master Gunner.

This option has merit for several reasons. First, it allows the task force fire support officer (FSO) and FSE to remain linked to the supported task force's planning cycle. It also allows the company FIST to be close to its company during gunnery.

FISTs supporting armor battalions would have to conduct gunnery with a mechanized infantry battalion. For example, in the case of an armor brigade, one mechanized infantry battalion commander would conduct BFIST gunnery for all nine of the brigade's company FISTs. The nine extra crews comprise nearly a company-sized element that the mechanized battalion would run through gunnery, in addition to its own Bradley crews. This extends the battalion's time on the gunnery range by one day.

DS Battalion Gunnery. This option allows the artillery battalion staff to integrate into the BCT's planning cycle. It also allows the DS FA battalion to integrate into its supported maneuver brigade's train-up for a rotation to the NTC or an actual deployment. This enables the DS FA battalion to focus gunnery on fire support. The brigade FSE can plan and execute the artillery battalion's gunnery alongside its supported BCT's maneuver battalions.

Div Arty Gunnery. The final option, BFIST gunnery conducted by the Div Arty, has several merits. It is the simplest in terms of organizational support and division gun line planning. Each DS battalion has nine BFISTs, and the Div Arty Headquarters and Headquarters Battery (HHB) has the three BFISTs assigned to the division cavalry, for a total of 30 BFISTs. This vehicle density gives the Div Arty the ability to schedule gun line time through the G3 and the division Master Gunner. The combined assets of all the DS battalions would make supporting a Bradley range for 30 Bradleys a simple task.

However, this course of action eliminates synchronization with maneuver. It does not allow the DS battalion operations officer to integrate BFIST gunnery with its supported BCT training cycle.

Additional Gunnery Challenge—Lack of Bradley Expertise. One of the biggest challenges posed by BFIST crew qualification was the lack of infrastructure in the Div Arty to train and validate gun-

Table	Title	M2/M3 Bradley Table	M7 BFIST Table (Proposed)
I	Crew Device Training	UCOFT	No change.
II	Crew Proficiency Course	No Live Fire	Replace TOW shots with two fire support engagements.
II	Section Training	Bradley Pairs	Not applicable to BFIST.
IV	Platoon Training	Bradley Platoon Dismounts	Not applicable to BFIST.
V	Crew Practice 1	First Live-Fire Sub-Caliber	Replace TOW shots with two fire support engagements.
VI	Crew Practice 2	First 25-mm Ammunition	25-mm ranges reduced to reflect def nature.
VII	Crew Practice 3	First HE/AP Ammunition	25-mm ranges reduced to reflect def nature.
VIII*	Crew Qualification	Crew Qualification	Must get a "T/P" on all fire support engagements.
IX	Scout Team Training	Cavalry Dry Run for Qualification	Crew stays in BFIST and processes CFF.
X	Scout Team Qualification	Cavalry Dry Run for Qualification	Crew stays in BFIST and processes CFF.
XI	Platoon Training	Dry Run for Qualification	Crew stays in BFIST and processes CFF.
XII	Platoon Qualification	Platoon Qualification	Crew stays in BFIST and processes CFF.

*Required within 90 days for live fire at the Combat Training Centers (CTCs).

Legend:
CFF = Call-for-Fire
Def = Defense
HE/AP = High Explosive/Anti-Personnel
TOW = Tube-Launched, Optically Tracked, Wire-Guided Missile
T/P = Trained/Practice
UCOFT = Unit Conduct of Fire Trainer (Tank Gunnery)

Figure 3: Comparison of the M2 Bradley (Infantry) and M7 BFIST (Fire Support) Tables

nery. DS FA battalions lack senior NCOs with institutional knowledge of and experience on the Bradley—NCOs who know what "right" looks like. As with a 13B Master Gunner, it takes years to imbue the depth of knowledge and experience the position requires.

In light of this, the Div Arty commander requested the division assign an 11M Bradley Master Gunner to the Div Arty as the BFIST Master Gunner for 18 to 24 months. This time is necessary to build the fire supporters' base of BFIST gunnery skills and knowledge of maneuver-oriented employment considerations. The only limitation of the 11M Master Gunner is he cannot train the fire support tasks proposed for BFIST qualification tables.

NTC Debut. 1st Brigade, 3d Division, was the first BCT in the Army to fight the BFIST at the NTC. The 1st Brigade's DS 1-41 FA deployed six of its recently acquired BFISTs to the NTC for the rotation. For the first time, company fire supporters have a vehicle that gives them the same signature, survivability and mobility as the maneuver units they support.

During the 1st BCT's Marne Focus, the task force FSEs worked with their maneuver counterparts to develop tactics, techniques, and procedures (TTP) to maximize the BFIST's effectiveness. (Marne Focus is a 14-day combined arms exercise, the final gate before an NTC rotation.)

BFIST Infiltration. TTP developed at Fort Stewart in training and validated through NTC 01-02 enabled the battalion task force and the company-team to reduce the risks of infiltrating a BFIST forward of the forward line of troops (FLOT) to an observation point (OP). This technique allows the maneuver task force to employ its FISTs like combat observation lasing teams (COLTs).

The task force FSO worked with the task force intelligence officer and company FSO, consolidated all reported enemy positions in the task force's area of operations (AOR) and plotted them on the situation map. Overlaid on these positions were the maximum ranges for the enemy weapon systems identified in the AOR. This, in effect, identified "safe routes" through which FISTs could infiltrate and operate well forward of the FLOT.

Once the location for a BFIST's OP is identified, the BFIST has two options for conducting the infiltration. The BFIST can infiltrate alone or with a wingman (an M2/M3 Bradley). Both options use procedures similar to emplacing scout teams.

Getting the BFIST forward of the FLOT enables the maneuver battalion task force to use the BFIST's communications systems and its thermal sight. *(Photo by Donald Aldea, PM BFIST)*

Getting the BFIST forward of the FLOT enables the maneuver battalion task force to use the BFIST's communications systems and its thermal sight. During the defense, this technique enables fire supporters to observe targets and call-for-fire well forward of company-team battle positions. The BFIST's thermal sight, in conjunction with its eye-safe laser rangefinder (ELRF), can identify and provide accurate target locations out to the ELRF's max range of 9,999 meters. In the past, due to the limitations of the FIST-V, this area was considered out of range for the FISTs.

While COLTs and scouts normally observe named areas of interest (NAIs) and target areas of interest (TAIs) during the reconnaissance/counterreconnaissance phase of the defense, the addition of the company-team FIST contributes to the overall lethality of the task force. Additionally, the BFIST gives the task force commander an additional set of eyes forward of his battle position. This enables him to get an early, accurate picture of the enemy's situation. The superb clear, thermal sight on the BFIST allows for quick acquisition and identification of both friendly and enemy forces.

Communications Platform. Although the company FIST is "in the hip pocket" of the maneuver company commander, the task force FSE works the FIST's emplacement. The improved communications of the BFIST over that of the FIST-V speeds up the task force's situational awareness of the enemy's course of action so it can react accordingly.

1st Brigade, 3d Division, was the first BCT in the Army to fight the BFIST at the NTC.

Additionally, for the first time during a CTC battle, a digital CFF originating at the company level was cleared and fired digitally. This ability to process and clear fires in an unbroken digital chain greatly speeds reaction to targets of opportunity during the heat of battle.

In early phases of the battles fought at the NTC, the task force commander or operations officer often talked with the company FSO by voice or digitally to determine what the FIST could see from the OP. The ability to provide instantaneous intelligence and targeting information enables commanders at all levels to make timely decisions based on

accurate, current information. This, in turn, allows commanders to fight battles more on their terms than on the enemy's.

Handheld Terminal Unit (HTU). One comment that resulted from 1-41 FA's experience at the NTC was the placement of the HTU in the BFIST's turret. The standing operating procedure (SOP) in 1-41 FA is for both the FSO and fire support NCO to occupy the BFIST's turret. The FSO, using the target location from the TSCP, clears fires from the graphics on his map board.

With the turret hatch open, the FSO can rest his map board against the turret. When buttoned up, however, the HTU occupies much needed space. Additionally, the readout on the HTU is harder to read and not as bright as the display on the TSCP.

The recommendation is to relocate the HTU to the fire support station (FSS) in the hull of the BFIST. Here the HTU can be used most effectively if the LCU is inoperable.

Doctrinal Changes. The improved lethality and communications of the BFIST allows the FIST to move faster and farther forward, thus setting the conditions for accomplishing the mission. 1-41 FA fire supporters developed several TTP for the BFIST at the NTC. Many of these TTP eventually will be adopted and our manuals updated.

Employment Options for the BFIST. For the FIST-V, there are three options for employment. The first keeps the entire team in the FIST-V. In the second option, the FSO rides in the company commander's track and the rest of the FIST remains in the FIST-V. The final option calls for the FSO to remain with the company commander and the FIST to act as a task force COLT independent of the company mission. Generally, these methods kept the FSO close to the company commander and the FIST in the company sector, if not in the company formation.

However, the BFIST brings a new set of capabilities to the battlefield. The early infiltration of the BFIST gives the task force commander an additional set of sharp eyes well forward in his sector. It improves the FIST's ability to see critical triggers and greatly improves the responsiveness of fires. The reinforced relationship with the task force tactical operations center (TOC) shifts the company fire supporters in a BFIST to prefer the COLT-like employment option.

With proper planning, the BFIST can provide its own security on a forward OP. Therefore, the BFIST crew is not limited to the speed of the company's advance or the shortfalls of its vehicles. If employed well forward of the FLOT, the FIST can focus fires faster in its task force's sector. This FIST employment is more like a COLT insertion at the BCT level.

FIST Control. The initial draft of *FM 3-09.30 TTP for Fire Support for the Battalion Task Force and Below*, (which will include the old *FM 6-30 Observed Fire*) not only contains control options for FOs, but also for company FISTs. (See Figures 4 and 5.) The task force FSE can either consolidate control of the FISTs at the task force level and employ them like task force COLTs or allow the FISTs to remain at the company level. FISTs in the companies perform their standard mission of planning, coordinating and executing fires for their companies.

Consolidating the FISTs at the task force emphasizes top-down, bottom-up fire planning and the mission of the task force as a whole, enabling the task force FSE to position company fire supporters where they can support the task force best.

This creates severe time constraints and, to some degree, limits the FSO's ability to fully support company mission planning and troop-leading procedures. As time constraints grow shorter and march routes longer, it will become more difficult for the company FSO to stay as tightly integrated into company planning as he had been before. This does not necessitate a rapid shift in the doctrinal application of fire supporters at the task force level and below; however, it does underscore the fact that BFIST technological advances are enabling both fire supporters and maneuver commanders to shape their battlespace more effectively.

Positioning the FSO. An interesting discussion arose about where the FSO

Option	Description
1. Decentralized	The fire support team (FIST) may call-for-fire from fire support assets available to support the operation. This option gives the commander the most responsive fires; however, it allows the FIST the least amount of control. Because the FO is allowed to determine which asset should engage each target, this option generally requires a highly trained observer and company/team fire support officer (FSO).
2. Pre-Designated	The FO is assigned a particular fire support asset from which he may request fire support, and he operates on that unit's net. If the FO thinks his target should be engaged with a different fire support asset, he must request permission from the FIST headquarters to change assets. Permission is granted on a mission-by-mission basis. Under this option, fire support is highly responsive if the asset is suitable for the type of target.
3. Centralized	The FO must contact the FIST headquarters for each call-for-fire. The FIST headquarters refers the observers or relays his request to an appropriate fire support asset. This option is least responsive for the observer, but it offers the highest degree of control to the FIST headquarters. This option generally is used when maneuver personnel are observers for their platoons.

Figure 4: Forward Observer (FO) Control Options

Option	Description
1. Decentralized	Consolidate FISTs at the battalion task force level to maximize the task force commander's ability to influence the battle at a critical time and place. Company commanders retain access to fire support expertise in the planning process while the FISTs are centralized at the task force for execution.
2. Centralized	FIST assets remain at the company for the fire support planning, coordination and execution.

Figure 5: Fire Support Team (FIST) Control Options

should position himself inside the BFIST. Should the FSO be in the turret with the FSNCO, or should he operate the LCU in the FSS? If the FSO is in the turret with the FSNCO, both have greater situational awareness and can cross talk. A fire support specialist sits in the FSS and operates the LCU—which could not be done in the FIST-V's targeting station.

The second option places the FSO at the FSS where he operates the LCU and a fire support specialist sits in the turret with the FSNCO. By placing the FSO inside the hull of the vehicle, he gains situational awareness of what is happening throughout the digital domain but loses situational awareness of what is happening physically outside the vehicle. Additionally, fire support specialists, with their training, generally are more proficient LCU operators than FSOs.

For the first time, BFIST allows fire supporters the ability to keep pace with the maneuver forces they support. BFIST is a more suitable vehicle for fire supporters to position themselves on the battlefield to execute the maneuver force's essential fire support tasks (EFSTs).

With the BFIST come new challenges for fire supporters in terms of how they train and fight. Gunnery and gunnery sustainment training will require particular attention over the next several years as we develop a core of BFIST subject matter experts within the Field Artillery. As units continue to field BFIST and rotate through our Combat Training Centers, BFIST TTP will evolve and be incorporated into our manuals and institutional training.

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Captain Dean J. Case II is the Assistant Fire Support Coordinator for the 3d Infantry Division Fire Support Element at Fort Stewart. He also has served as a Fire Direction Officer, Ammunition Platoon Leader and Reconnaissance and Survey Officer for the 3d Battalion, 321st Field Artillery, 18th Field Artillery Brigade, Fort Bragg, North Carolina, and as an Ammunition Platoon Leader in the 6th Battalion, 37th Field Artillery, 2d Infantry Division in Korea.

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From the Gun Line
2001 Author's Guide

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2001 *Field Artillery* Themes

Edition	*Theme*	*Deadline*
May-Jun	*Targeting*	*1 Feb 2001*
Jul-Aug	*History*	*1 Feb: History Contest* *1 Apr: Other*
Sep-Oct	*FA and Fire Support Doctrine*	*1 Jun*
Nov-Dec	*Transforming the Force*	*1 Aug*

Team Fires

Taking Responsibility for TF Mortars

By Lieutenant Colonel John Uberti and Captain John J. Herrman

Team Fires: C/1-319 AFAR & 2-505 PIR 81-mm Mortar Platoon in Albania

The direct support (DS) battalions of the 82d Airborne Division Artillery, Fort Bragg, North Carolina, always have played a significant role in training, assessing and employing task force (TF) mortars. During forced entry or stability and support operations (SASO), it is critical for each brigade to have positive, central control maintained over all its indirect fire systems. To command and control (C^2) and integrate these systems more easily, the 82d Airborne Division developed tactics, techniques and procedures (TTP) called "Team Fires." The task organization of Team Fires normally includes placing one or more of a brigade's 81-mm mortar platoons under the operational control (OPCON) of its direct support (DS) artillery battalion.

This article explains how the 82d's 1st Battalion, 319th Airborne Field Artillery Regiment (AFAR), DS to the 505th Parachute Infantry Brigade, is "taking" responsibility for training the TF mortars by organizing all indirect fire assets into Team Fires.

Team Fires for the Brigade Task Force. The Team Fires organization begins during the alert, marshal and deploy phase with the mortar platoons' attending 1-319 AFAR's orders briefing, rehearsals, rock drills and communication exercises. This ensures the mortar platoons are synchronized with the DS battalion and scheme of fires.

Before executing an airborne assault, the platoons "coffin" (pack) the mortar tubes and ammunition on the artillery heavy drop platforms. This ensures the indirect assets are assembled together on the ground. Depending on the mission, Team Fires also may task organize with elements from air defense and military intelligence.

Conceptually, Team Fires can be considered something akin to a Vietnam-era firebase, once on the ground. Generally the task organization during the initial airborne assault remains in effect until friendly units have moved outside the 81-mm mortar maximum range (5,800 meters). Team Fires greatly facilitates interaction and coordination among all types of lethal and nonlethal fire supporters.

According to "Training Circular (TC) 82d Airborne Division Airfield Seizure," the primary purpose of Team Fires is to "facilitate clearance of fires, assist in local security of fire support assets and simplify fire support nets to provide responsive fires." Not only is 1-319 AFAR attempting to meet the division TC's intent, but also expand the concept beyond airborne assaults.

Under Team Fires, a close working relationship with TF mortars allows the FA battalion fire direction center (FDC) to assert positive control over all the brigade's indirect assets and direct the best method of target engagement in accordance with the commander's high-payoff target list (HPTL). See Figure 1. The battalion fire direction officer (FDO) is able to take the commander's guidance for fires and more effectively apply it to targets.

When all assets are centralized, the FDO easily can identify an asset that is available to fire. A simple rule of thumb for using mortars vice artillery is "If a target is within three kilometers, it is generally a mortar target; if it is outside three kilometers, the mission is sent to the cannon battery." Team Fires allows the FDO to pass the mission to a 81-mm mortar platoon in the same manner as sending a mission to a cannon battery.

When the mortar platoons collocate with the batteries, the DS battalion commander can ensure the mortars can account for non-standard conditions. The mortars can receive and implement survey, meteorological messages (Met) and declinate aiming circles more rapidly and accurately.

Also the FDO can compensate rapidly for the range limitations of each weapon system (minimum and maximum) and relieve the TF fire support elements (FSEs) from performing tactical fire direction. The result is more responsive fires for the maneuver commander.

1-319 AFAR assumes responsibility for tracking the mortar ammunition status and tube and personnel strength. The battalion helps transport mortar equipment, ammunition and personnel until the follow-on air-land vehicles arrive. Even after the mortar platoons return to their parent infantry units' control, the FA tactical operations center (TOC) continues to battle track their locations and their status and ensure the mortar platoons receive survey and Met data. To accomplish this, the DS battalion must play an active role in mortar home-station training.

Integrated Training. 1-319 AFAR is refining the brigade mortarmen's gunnery skills and integrating mortarmen into artillery and fire support training, whenever possible. As artillerymen, we impress upon the mortarmen the value of crew drill and isolating non-standard conditions. This is done through the use of survey, Met and aiming circles.

The parent infantry battalion focuses the mortar platoon on its core infantry tasks, movement and occupation drills, as well as indirect fire tasks. This integrated training concept capitalizes on the expertise and resources of the three infantry battalions and the DS FA battalion.

Garrison Training. This training begins at the individual and section levels for the mortars. Gun crews and mortar FDCs train as separate components, sharpening their individual skills.

The mortar sections train to a time standard; mortar crew drills can be found in *FM 7-90 Drills for the Infantry Mortar Platoon, Section and Squad* (3 March 2000) and *Army Training and Evaluation Program (ARTEP) Mission Training Plan (MTP) 7-90 Infantry Mortar Platoon, Section and Squad* (3 March 2000).

Infantry commanders need to understand that the individual time standards outlined in MTP 7-90 do not support the collective task time standard. For example, the 81-mm MTP standard for an adjust-fire mission is five minutes. However, if the standard of four corrections is used, the mortar FDC will require three minutes and 30 seconds while the mortar sections will need an additional five minutes. Subsequently, the adjust-fire mission with four adjustments will take 8 minutes and 30 seconds, which is three minutes and 30 seconds longer than the MTP allows. The mortar MTP accurately reflects required mission processing times.

The Infantry and Fire Support communities should address the MTP shortcomings.

By assessing crew drills against a time standard, the mortars will be able to isolate weaknesses (FDC or section, initial or subsequent data) and focus training on those weaknesses. Maneuver commanders, with the help of artillerymen, must identify specific shortfalls and then train to eliminate those shortfalls. When mortar units are ready to come together and execute collectively as a section or platoon, the DS battalion steps in to help.

An effective training tool has been the forward observer training site (FOTS) equipped with the training set fire observation (TSFO). The fire support team (FIST) or FO party is in the FOTS with radios, and its mortar section (or platoon) occupies a field outside the FOTS. The observer is presented a target on the TFSO screen and sends his call-for-fire (CFF) via FM radio to the mortar FDC. The mortar section executes the mission dry, and when the FDC transmits "Shot," the mission is fired on the TSFO. Soldiers follow normal observed-fire procedures until the mission ends. This training has been extremely beneficial to the mortars and observers and capitalizes on having the entire gunnery team at one location for an after-action review (AAR).

The ability of either element, infantry or artillery, to focus the training is what makes the training most beneficial. This integrated training has been a good way to work out standing operating procedures (SOPs) between the elements to ensure rapid fires. Additionally, mortarmen participate in the FA battalion's Big-Three Training (executive officer, chief of firing battery and gunnery sergeant), focusing on the aiming circle, establishing position and direction control, and rigging tasks.

1-319 AFAR ensures the integrated mortar-artillery training is a major event for the DS battalion. The artillery battalion can provide mortarmen a level of instruction and insight they would not receive otherwise. This training has enhanced the mortar leaders' confidence and abilities. Additionally, it reinforces the team concept. This close relationship between the artillerymen and mortars allows the mortarmen to observe units that routinely train to achieve the five requirements for accurate predicted fires. Subsequently, the mortars are now more responsive and more accurate with first rounds.

Field Training. 1-319 AFAR has taken an active role in developing not only the mortar sections/platoons, but also the maneuver commanders. 1-319 AFAR validates the training through a rigorous external evaluation (EXEVAL). The program has caused mortar crews to focus their training, significantly improving their combat readiness.

The brigade TF has rolled up the evaluation procedures and format in a published document: "3d Brigade Mortar Training and Evaluation Program." The document outlines procedures for command safety certification, FDC certification, gunner certification, live-fire evaluations, EXEVALs and section certification.

The manual's format for the evaluation is, more or less, standard: an external evaluation lasting 48 to 72 hours driven by the brigade for 81-mm mortars and battalion for 60-mm mortars. Tasks, conditions and standards are taken from the mortar MTP 7-90.

Additionally, the MTP outlines the observer/controller (O/C) package that has been the cornerstone of and key to the success of the program. For the 81-mm EXEVAL, the maneuver battalion

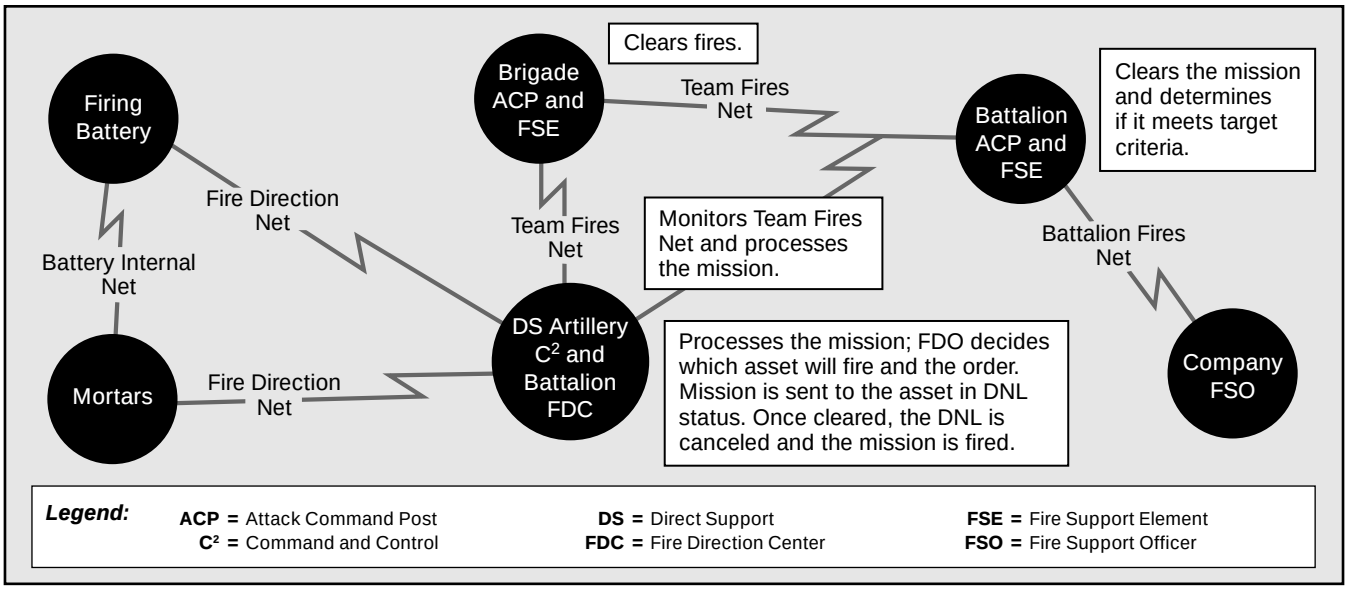


Figure 1: Fire Mission Processing with the Team Fires Net

Adjust Fire Mission. For this example, the standard is four adjustments, starting with a 400-mm bracket. The mortar MTP does not specify the number of adjustments. The artillery MTP/STP standard for adjusting fire is four adjustments.

	81-mm			M119 105-mm		
	Initial	Subseq.	Total	Initial	Subseq.	Total
FO	—	—	—	:45	:10	1:35
FDC	2:00	:30	3:30	:45	:45	3:50
Guns	2:00	1:00	5:00	:30	:30	2:30
Total			8:30			7:55
MTP Standard			**5:00 Min.**	***MTP Standard***		**7:55 Min.**

Legend: **FDC =** Fire Direction Center; **FO =** Forward Observer; **MTP/STP =** Mission Training Plan/Soldiers Training Plan

Figure 2: Comparison of MTP Standards in an Adjust Fire Mission for the 81-mm Mortar and M119 Howitzer

commander is the evaluation officer-in-charge and the headquarters and headquarters company (HHC) commander is the senior evaluator who coordinates the O/C effort, issues a company order, evaluates all maneuver tasks and drives the AAR. The HHC commander also has the latitude to retrain on any task, as needed.

Three additional O/Cs work for the HHC commander: a sister battalion's mortar platoon leader, mortar platoon sergeant and mortar FDC chief. These O/Cs evaluate all tasks by capturing times on the gun line and FDC.

The battalion fire support officer (FSO) coordinates the training and evaluation effort on the observation post (OP) with observers sending CFFs to the platoon and then captures accuracy feedback using the X and Y axis in *ARTEP MTP 6-137-30 Field Artillery Cannon Battery*.

The 60-mm evaluation is much the same with the respective company commander as the senior O/C and the battalion mortar platoon supplying the gun line and FDC O/Cs. The AARs cover procedures, time standards and accuracy for each mission.

The EXEVALs have reinforced the necessity for Met and survey support, and the mortar platoons have learned to expect survey in all positions and have their battalion FSEs forward Met messages during live-fire training.

Training Shortcomings. In reviewing the standards described in MTP 7-90 for mortar fire missions, there is a contradiction between section time standards and total time standards. According to the MTP, FDC and mortar section time standards are not part of the total collective time standard. The MTP does not clearly state the standards for the mortar platoon's conduct of fire missions. Each individual section in the platoon could achieve its respective MTP time standard and the platoon would not attain the total mission time necessary for it to be rated as trained.

Additionally, Appendix A, which states the guidelines for the time standards, does not clarify the timing of missions. A mortar platoon leader should be able to look at the time standard for mission processing and know how it is broken down by component. This would allow each section to train toward a specific goal to better accomplish the collective task of conducting fire missions.

Figure 2 is an example of how an 81-mm mortar section time standard (five minutes) for low-angle adjust fire does not support the collective tasks time standard (eight minutes and 30 seconds). The figure also compares the mortar time standard to an M119A1 time standard.

Training our Maneuver Commanders in Fire Support. The brigade uses fire planning exercises (FPX) and fire coordination exercises (FCX) to expose the infantry company leadership to fire planning and execution and to emphasize their responsibility in the process. FPXs are routinely conducted in or using FOTS. Battalion FSOs conduct FOTS training, to include CFF procedures, fire support communications architecture, graphic control measures used to echelon fires on the objective and final protective fires (FPF) planning and execution. After completing the FOTS training, the company-team plans and rehearses the company fire plan using a prepared terrain model in accordance with battalion and company tactical SOPs.

The FCXs, or "walk and shoots," are conducted during daylight and consist of a company movement-to-contact and a deliberate attack. These exercises are commonly tactical exercises without troops (TEWTs). The movement-to-contact phase of the FCX uses an opposing force (OPFOR) and fire markers. Companies react to a series of situational targets during their movements-to-contact by calling for and adjusting fires to suppress or destroy enemy targets.

The exercise transitions into live fire during the deliberate attack phase. Company FISTs echelon mortar and artillery fires in support of the attack. The FCX culminates with an attack aviation dry-fire exercise.

These training exercises increase the maneuver leaders' awareness of and ability to employ fire support assets and other battlefield operating systems effectively before committing troops in a direct fire fight.

The ultimate goal of the integrated mortar-artillery training for Team Fires is to ensure all indirect fire assets can provide the most responsive, accurate fires possible for the maneuver commander. Mortars are already the maneuver commander's most responsive fire support asset. Our challenge, as fire supporters and artillerymen, is to make mortar fires as accurate as our cannon fires.

By 1-319 AFAR's "adopting" the brigade's mortars during garrison training, many live fires, FCXs and Combat Training Center (CTC) rotations, the battalion truly is prepared to support the regimental commander's plan—with all assets available to him.

Lieutenant Colonel John Uberti commands the 1st Battalion, 319th Airborne Field Artillery Regiment (1-319 AFAR), 82d Airborne Division, Fort Bragg, North Carolina. In his previous assignments, he was the Executive Officer for the 1-321 AFAR and Brigade S3, both in the 18th Field Artillery Brigade (Airborne), also at Fort Bragg. He commanded B Battery, 2-319 AFAR, 82d Division, and D Battery, 319th Field Artillery in Vicenza, Italy.

Captain John J. Herrman, until recently, was the Executive Officer of A Battery, 1st Battalion, 319th Airborne Field Artillery Regiment at Fort Bragg, the same battalion in which he served as a Company and then Battalion Fire Support Officer. Currently, he is attending the Aviation Captains Career Course at Fort Rucker, Alabama.

Fixing Fire Support in the GCE

A MAGTF Commander's Perspective

By Major General Robert R. Blackman, Jr., USMC

In the past 10 or so years, we have decreased our fire support systems too far. We got rid of a lot of our artillery weapons in the name of efficiency, in the name of mobility.…We have atrophied our Marine ground fires inventory to a dangerous point. We're out-gunned and out-ranged by just about everyone. So I am fixing the artillery—bringing robustness back to the Marine Artillery. And since I ordered the review of the Marine Artillery, I've decided we need to look at fire support for the entire MAGTF [Marine Air Ground Task Force] to ensure it has an integrated, flexible system.

General James L. Jones, USMC Commandant
Interview, "Fixing the Marine Artillery," Sep-Oct 00

The Commandant directed the leaders of the Marine Corps to fix artillery and, more importantly, examine fires across the MAGTF. To date, this examination indicates the fire support brought to the fight by the ground combat element (GCE) of the MAGTF has atrophied in the name of efficiency, becoming inadequate to support the expeditionary employment concepts that continue to be developed by the Marine Corps.

The good news is that it is not too late to reverse the slide. This article discusses many of the actions to affect these corrections. To understand how these changes will improve fire support, it is first necessary to understand the organization in which the GCE operates and to grasp the breadth of assets the GCE commander has at his disposal.

MAGTF 101. The signature characteristics of the Marine Corps are its expeditionary culture and core competency as a total force in readiness. We achieve these characteristics through an inherent flexibility and ability to task organize and fight as an integrated combined arms team.

A V-22 Osprey lifts a prototype M777 155-mm towed howitzer.

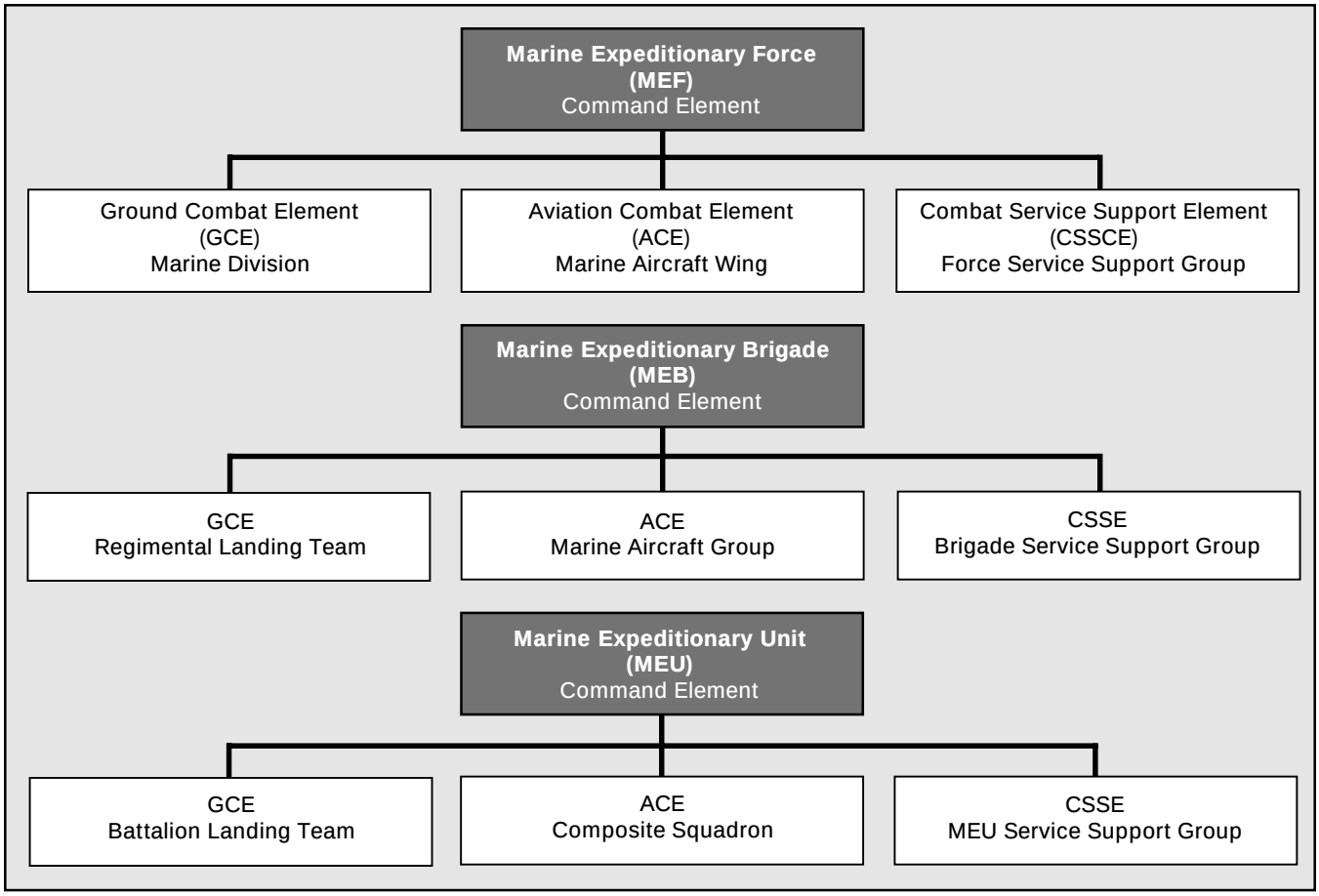


Figure 1: Marine Air-Ground Task Forces (MAGTFs) are task organized for specific missions and range widely in size and capabilities. Each MAGTF has a Command Element, GCE, ACE and CSSE. The MEB, the MAGTF core capability provided to commanders-in-chief (CINCs), consists of about 17,000 Marines and more than 150 aircraft.

The MAGTF commander fights a single battle with an integrated organization of air, ground and logistics forces, making the whole far more capable than the sum of its parts. The scalability of task organized MAGTFs provides the means to accomplish multiple missions across the full spectrum of military operations without redeployment or reorganization.

The MAGTF has unique capabilities to conduct expeditionary operations in support of a naval campaign, sustained combat operations and operations-other-than-war or serve as a seamless part of a joint and (or) combined force. To project and sustain combat power, assure access and enable joint, allied and coalition operations, the MAGTF typically strikes a balance between firepower and mobility. The MAGTF's expeditionary nature and the evolving operational concept of Expeditionary Maneuver Warfare place great emphasis on the GCE commander's ability to employ his ground fire support and other available assets in the correct volume and type at the proper time and place.

A typical MAGTF is composed of a command element (CE), a GCE, an aviation combat element (ACE) and a combat service support element (CSSE) and ranges in size and capability. (See Figure 1.) To meet specific mission requirements, a GCE can range in size from a platoon or company in a special purpose MAGTF (SPMAGTF) to a battalion landing team (BLT) in a Marine expeditionary unit (MEU) or a regimental landing team in our mainstay, the Marine expeditionary brigade (MEB). In a Marine expeditionary force (MEF), the GCE consists of one or more divisions.

MAGTF Fires. Typically, the MAGTF commander (and the GCE commander) has access to a wide variety of fire support systems to provide echeloned and mutually supporting fires. MAGTF fire support historically has been a balanced system of air-, ground- and sea-delivered fires that complement each other and reduce the risks associated with each system's vulnerabilities. The ACE, along with naval aviation, contributes the aerial-delivered fires needed to fight the deep battle and complement the surface-delivered munitions supporting the close and rear battle. The ACE can include rotary-and fixed-wing offensive air support in the form of the AH-1W Cobra, AV-8B/C Harrier, EA-6B Prowler and F/A-18C/D Hornet aircraft.

While not a part of the MAGTF, per se, the naval surface fire support (NSFS) organic to the surface combatants accompanying or forming an element of the amphibious task force provides accurate, responsive, high-volume, massed fires needed in the early stages of an operation launched from the sea. NSFS also augments the MAGTF's organic fires once operations are established ashore. NSFS currently consists mainly of 5-inch/54-mm guns mounted on destroyers and cruisers, but the Navy (with the active support of the Marine Corps) is vigorously pursuing enhanced and (or) improved weapons and target acquisition (TA) systems, as well as platforms to influence events ashore.

Further, as stated in our vision, the Marine Corps aims to enhance our responsive, integrated and balanced expeditionary fires, leveraging improvements

to organic surveillance, TA, aviation and indirect fires along with naval fire support systems and joint capabilities.[1]

Within the GCE, the commander normally has two distinct forms of fire support organic to his command. The first is his artillery that currently is armed with the M198 155-mm towed howitzer and provides lethal, highly responsive, all-weather fire support across the MAGTF. Artillery units are task organized for combat as the situation requires and normally range in size from a battery (in the case of an MEU) to the division's own artillery regiment. The GCE's second form of fire support is the infantry mortars (60-mm at the company level and 81-mm at the battalion level) that complement the artillery's indirect fires for the close and rear area battles.

A quick review of the GCE's organic fire support assets shows the differences between weapon systems available to the Marine Corps and Army. Beyond the obvious differences in artillery systems (all towed versus self-propelled in many Army divisions) is the Army's rocket/missile systems. Multiple-launch rocket systems (MLRS) provide an Army commander lethal, long-range, highly responsive and accurate, all-weather fire support. MLRS allows the Army commander to be less reliant on Air Force assets to shape his battlespace and have an immediate response in the counterbattery battle.

Currently, the GCE commander must rely on the MAGTF's aviation assets, not all of which are all-weather, to perform many of the fire support tasks accomplished by the Army's MLRS units.

Fires Employment. The GCE commander employs his fire support assets throughout his battlespace to produce lethal combined arms effects on the battlefield. During operations, he uses many TA assets and fire support weapon systems that are closely integrated with electronic attack and other nonlethal means to isolate and shape the enemy. This creates weaknesses within the enemy defenses or formations and protects and supports maneuver and rear area forces in the close battle.

ACE and NSFS assets are available to the commander and often will provide the preponderance of fire support in the early phases of an expeditionary operation. That said, artillery and mortars remain the GCE commander's principal means of immediate, all-weather fire support for ground combat operations. Artillery assets support the GCE commander by providing close and continuous fires to suppress, neutralize or destroy enemy targets that threaten the mission. Mortar fires complement the artillery fires and provide immediate fire support to the small unit commander. The salient point is that these assets reside under one command, the GCE.

Mortar fires complement the artillery's indirect fires in the close and rear area battles.

Allowing his tactical units the opportunity to use the mortars for the small-unit fight, the GCE commander can prosecute a single seamless battle by using his artillery units to perform three basic tasks. First, artillery supports the maneuver elements fighting the close battle. Second, artillery fires help create depth by attacking enemy reserves, restricting enemy movement, providing long-range fire support to reconnaissance elements and disrupting/degrading enemy command and control (C^2) systems and logistical support. Third, artillery elements deliver counterfire to ensure freedom of action for ground maneuver elements.

Evolution of Expeditionary Warfare. The expeditionary nature of MAGTF operations necessitates a rapidly deployable, mobile and versatile, adaptable and sustainable highly trained force in readiness. Indeed, today there are fewer American forces forward based to respond to crises. Adding this fact to the increasing number of situations requiring US military intervention places a greater premium on expeditionary forces.

As the Commandant said in his October 2000 article for the *Armed Forces Journal International*, the term "expeditionary" implies the force is "organized to accomplish a broad range of military objectives in a foreign country or region. Such a force must be able to deploy rapidly, enter the objective area through forcible means, sustain itself for an extended period of time, withdraw quickly, and reconstitute rapidly to execute follow-on missions."[2]

The MAGTF continues to evolve to meet the demands for greater deployment speed and create an effective operational impact once deployed. All elements of the GCE, including artillery, must continue to keep pace with the evolving requirements for expeditionary warfare. This includes meeting the challenges inherent in providing all-weather, continuous fire support to match our maneuver force needs and mesh decentralized operations common in the Ship-to-Objective Maneuver concept (STOM) with centralized fire support command and control.[3] Figure 2 lists the type of operations a GCE commander must be able to execute as part of a MAGTF.

Fixing GCE Fires. In the first month of assuming his post as Commandant, General Jones expressed concern about the state of the Corps' organic indirect

- Conduct forcible-entry operations.
- Defeat the enemy armed forces in sustained combat operations ashore.
- Retaliate for an aggressive act by a foreign political or terrorist group.
- Conduct peace support operations.
- Conduct show-of-force operations.
- Provide humanitarian assistance during a natural disaster or civil unrest.
- Protect and (or) evacuate US citizens abroad.
- Protect US interests abroad.

Figure 2: The GCE commander in a MAGTF must be prepared to execute these missions—and others as directed by higher authorities.

fire support capabilities. His direction to "fix artillery" by July 2004 focuses attention on the many issues facing the fire support community. The Commandant identified the need for fire support capabilities across the spectrum of operations, from devastating, lethal fires in sustained operations ashore to tailored nonlethal fires in support of decisive expeditionary operations. Along with air and naval fires, General Jones sees the need for Marine artillery to provide flexible, responsive support for the type of operations envisioned in Expeditionary Maneuver Warfare, the overarching concept for the MAGTF.[4]

Across the entire spectrum of MAGTF fire support, there are now plans to improve the synergy of effort among aviation, NSFS and artillery to fully integrate the three doctrinal fire support components (TA; command, control and communications or C^3; and weapon systems/ammunition) along with nonlethal fires. The goal of these actions is to achieve a complete, balanced and complementary fire support system.

As a GCE commander, I have come to the conclusion that Brigadier Jonathan B. A. Bailey of the British Army was correct when he wrote about the modern style of warfare. Writing in November 1996, the Brigadier stated, "Today we should ensure that our understandable desire to enhance strategic and tactical mobility, which often results in 'light' forces, is not seen as cause enough to dispense with the means to provide the fires that must be generated in time and space, i.e. for the duration of a campaign and throughout the theatre, whatever the scale of operation and the nature of the opponent. As forces become *'lighter'* so firepower may have to increase in equal proportion; and the quality of firepower that can lend both mass and velocity."[5] Our forces may be getting "lighter," but the fire support they require needs to be more abundant and versatile.

The Lone System. Within the GCE for the past decade, the commander has had only one weapon system, the M198 155-mm howitzer, for medium- to long-range indirect fire support. In an effort to downsize and economize, the Corps adopted a one-weapon system for its artillery.

The deficiency of the lone system is its inability to achieve the balance and complementary capability the GCE commander needs for immediately responsiveness. Multiple systems introduce their own strengths and weaknesses in the calculus required by each situation for accuracy, terminal effects, availability, speed of engagement, vulnerability and relative cost to employ. Gaps in capabilities among the systems must be covered by each system's complementary attributes.

Major General Carl F. Ernst, the Army's Chief of Infantry, simplified this calculus as "the echelonment of fires" in his article "Is the FA walking Away from the Close Fight?" in September-October 1999. He thought all available fire support must be employed as close as possible to maneuver forces to create or increase freedom of movement for forces fighting the close battle. Fire support systems must create a complementary blanket of fire to engage enemy forces throughout the depth of the battlespace. Then as the distance between opposing forces decreases, shorter range weapon systems become the main effort, creating a "wall of steel" to fight the extremely close battle. Of course, the long-range systems continue to engage deeper targets, shaping the next battle.[6]

While air and naval assets provide a portion of this complementary blanket, the GCE commander needs complementary all-weather organic fires at his immediate disposal to ensure the risks he takes are acceptable. General Jones believes the Corps' echelonment of GCE fires is "broken," because it's inadequate at both the high and low ends of the GCE's organic fire support.[7] Figure 3 depicts the Corps' current state of echelonment of fires.

To answer this deficiency, the Artillery Operational Advisory Group (OAG) was charted in September 1999. The OAG consists of the artillery regimental commanders from the active and Reserve forces and the senior representative from the USMC Artillery Detachment at Fort Sill, Oklahoma, with additional input from Headquarters Marine Corps, as required. The OAG has identified and prioritized artillery and ground fire support issues directly impacting operational capabilities, standardization, training, readiness, structure, manning and safety. The Artillery OAG also has provided long-term recommendations for artillery and fire support to the GCE Advocate at Headquarters Marine Corps, Lieutenant General Emil R. Bedard at Plans, Policies and Operations.[8] Figure 4 lists some of the recommendations agreed upon by the Ground Board of the GCE Advocate.

Firing System Triad. The Commandant has approved the plan to establish an artillery firing system triad to replace the current lone system by the year 2015.[9] *(*This triad should not be confused with the doctrinal fire support triad consisting of the three fire support components, fire support C^3, TA/battlefield surveillance and fire support resources.) The Corps' firing system triad, along with improvements in our TA, integration of our C^2 system and munitions, will significantly reduce the gap in our abilities to echelon ground fires (see Figure 5).

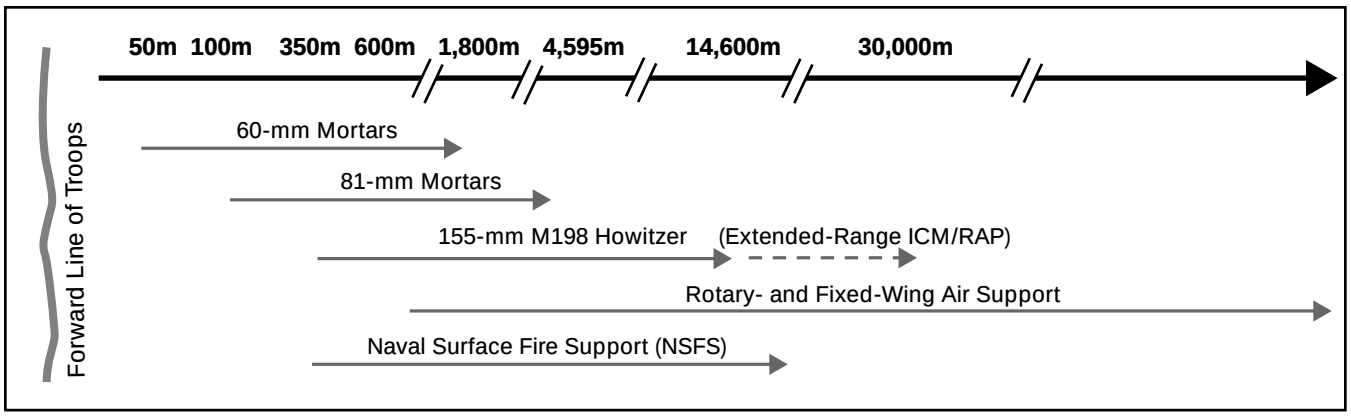


Figure 3: Current Echelonment of Fires Available to the GCE Commander

- Develop a firing system triad to meet future MAGTF ground fire support requirements.
- Conduct a comprehensive, Commandant-directed force structure review of all organic division indirect fire systems, including mortars, to ensure they are mutually supporting.*
- Transition two battalions of the 14th Marine Regiment, 4th Marine Division, Marine Forces Reserve, to the high-mobility artillery rocket system (HIMARS) and, possibly, add one HIMARS battery to each active Marine division.
- Improve target acquisition capabilities, to include replacing the current AN/TPQ-46 radar with an enhanced ground weapons locating radar (GWLR) with significantly greater range and finding a more capable replacement for the AN/GVS-5 handheld laser rangefinder.**
- Improve command and control capabilities, including adding a tactically integrated C^2 system and an integrated mortar ballistic computer (MBC).
- Reorganize the 14th Marine Regiment to perform the force artillery mission for the MEF commander.
- Improve munitions and ammunition transport and handling equipment.
- Establish an Executive Agent for MAGTF Fires to provide additional focus and continuity of effort to fix fire support across the entire Marine Corps.
- Evolve fire support doctrine to meet the future requirements of Expeditionary Maneuver Warfare and supporting concepts and complement future C^2 and firing systems.
- Improve training and manning for artillery personnel and units.

* Mortars organic to infantry units are not part of the triad or review as they are proven assets needing only minor tweaking in terms of ammunition and command, control and computers.

** The GWLR will be integrated with Navy radars that also identify counterfire targets.

Figure 4: Fixes for Marine Fire Support. The Ground Board of the GCE Advocate, Headquarters Marine Corps, has agreed to this list of recommendations suggested by the Artillery Operational Advisory Group (OAG).

The firing system triad will meet challenges confronting Marine artillery, both now and in the future, providing the GCE commander integrated, responsive and continuous deep battle shaping fires, counterfires and close battle supporting fires directly under his control. The triad will achieve the complementary internal capabilities to support maneuver forces operating with ever-greater depth and speed on an increasingly chaotic and confusing battlefield.

The triad will be composed of three new weapons systems. The first but least defined element is the Expeditionary Fire Support System (EFSS). EFSS will be characterized by increased mobility and reduced size and weight (as compared to current artillery systems) along with a small logistic footprint. It must be internally transported by the V-22 Osprey helicopter to allow the GCE to take full advantage of the radius, speed and altitude profile of this aircraft. Ideally the EFSS will be suited for shipboard deployment with MEUs and provide immediate, close and continuous fires (more lethal than 81-mm mortar fires) in support of highly mobile mechanized and (or) heliborne assault forces.

The second system is the lightweight M777 155-mm towed howitzer with towed artillery digitization (TAD). This system, currently in its Engineering and Manufacturing Development phase, has an initial operational capability (IOC) in the Marine Corps of 2004. It will replace the M198 howitzer as the premier cannon weapon for active and Reserve forces. The M777 w/TAD will capitalize on proven lethality, firing all lethal and developmental 155-mm family of artillery munitions. It will feature increased accuracy and improved emplacement, displacement and mobility capabilities, making it better suited to meet the close support and deep fight requirements of the expeditionary GCE.

The third system is the Army's high-mobility artillery rocket system (HIMARS) currently in the Concept Exploration phase of the acquisition process with an IOC of 2008. HIMARS will provide the GCE commander a lethal, high-volume of immediately responsive fires that will complement the ACE's tactical aviation assets. More importantly, HIMARS will provide a critical, highly responsive counterfire capability, especially at extended-ranges not attainable by current or projected cannon ground fire support systems.

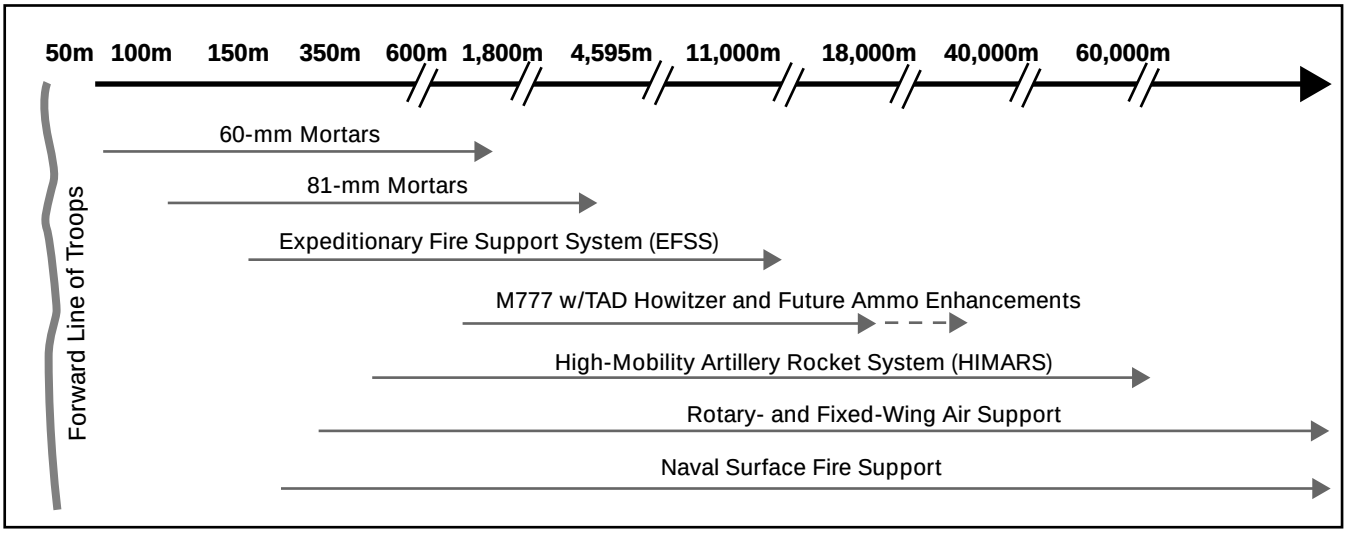


Figure 5: Fire Support System Triad and Future Echelonment of Fires

Each system in the triad brings unique, complementary capabilities along with intelligent redundancies to the GCE and MAGTF. They will significantly enhance the effects of ground fire support across the full spectrum of armed conflict and give the GCE commander flexibility in task organizing to meet threats.

Bridging the Gap. The addition of EFSS and HIMARS to the 155-mm Marine Corps cannon artillery fills the two major gaps in organic ground fire support for the GCE. The first gap is at the lower end between the organic mortars of the Marine infantry units and the M198, and the second is at the high end between artillery and the air support provided by the ACE.

A CH-53E Sea Stallion lifts today's 155-mm M198.

Experiences of the past few years and our analysis of fire support requirements for our emerging/future warfighting concepts demonstrate one system simply cannot meet all the challenges. While the 155-mm howitzer will continue to provide the bulk of our ground fires, the Marine Corps must bridge the expeditionary fire support gap at the low end with a light and mobile system that has enough ammunition lethality and range to continuously support expeditionary and heliborne forces rapidly moving across the battlefield.

The inadequacies at the high end have always existed, but the problem is becoming exacerbated by the increasingly fluid nature of expeditionary operations that has increased demand for support of long-ranging operations. If you combine Brigadier Bailey's remarks about the requirement for additional fire support to lend mass and velocity as forces become lighter[10]with the evolution in expeditionary warfare and then add the increased ranges of our potential adversaries' indirect fire support systems, a long-range, rapidly-delivered indirect fire support asset in the GCE is a necessity.

HIMARS will fill the high-end gap in the echelonment of fires. Although aviation and naval fires will continue to provide the majority of our long-range fires, HIMARS is essential to ensure the GCE commander has continuous responsive, all-weather fires under his control. The rocket will provide the lethality and accuracy of large-caliber artillery munitions coupled with the high-volume, massed fires required by the GCE commander. HIMARS will help him influence the deep battle, negating the enemy's fires and allowing GCE forces to maneuver decisively.

To make the fire support triad and the greater objective of fixing fires a reality, the Marine Corps is developing a "Fire Support Road Map." Phase One will establish an Executive Agent for MAGTF Fires to provide top-down integration of all MAGTF fire support systems (air, ground and sea). Phase Two will include buying and fielding the M777 w/TAD howitzer, HIMARS, the ground weapons locating radar (GWLR) and a mortar ballistic computer (MBC) to better integrate the infantry mortars and continuing to refine doctrine and organization. An integrated C^2 system and improved ammunition handling and transportation equipment will be fielded during Phase Three. Finally, during Phase Four, EFSS will be fielded along with the doctrine to support the integrated employment of the firing system triad.

The firing system triad meets the Commandant's directive to fix artillery. With the triad plan in place and other recommended corrective actions begun, the vision for ground-based fire support to the GCE and the MAGTF in future operations is indeed bright and robust. The GCE will have an organic, continuous, mobile, timely and short- and long-range ground-based fire support system that, when integrated with aviation and naval surface fires, will allow the MAGTF to meet the demanding challenges of future expeditionary warfare.

In the end, this will give Marine operating forces the flexibility to achieve a wide range of effects across the full spectrum of lethality and conflict.

Major General Robert R. Blackman, Jr., US Marine Corps, took command of the 2d Marine Division at Camp Lejeune, North Carolina, in June 1999, the same division in which he previously served as the Assistant Division Commander. In other billets, he was the President of the Marine Corps University, Quantico, Virginia; Military Assistant to the Secretary of the Navy at the Pentagon; and Executive Officer for the Commander-in-Chief of US Central Command at MacDill AFB, Florida. He also has served as Head of the Current Operations Division of Headquarters, Marine Corps at the Pentagon. As the G3 Operations Officer for Marine Forces Central Command (Forward), he served in Southwest Asia during Operations Desert Shield and Storm. He commanded the 15th Marine Expeditionary Unit (MEU), Camp Pendleton, California; and the 3d Battalion, 8th Marines, Camp Lejeune, including a Mediterranean deployment with the 22d MEU. In addition, Major General Blackman commanded a rifle company in the 3d Battalion, 1st Marines of the 1st Marine Division at Camp Pendleton.

Endnotes:

1. General James L. Jones, *Marine Corps Strategy* 21, 3 November 2000.
2. General James L. Jones, "What's in a word?" (*Armed Forces Journal International*, October 2000).
3. Interview with General James L. Jones, Commandant of the Marine Corps, "Fixing the Marine Artillery" (*Field Artillery,* September-October 2000).
4. Commandant of the Marine Corps (CMC), Washington, DC/Plans, Policies and Operations, message "CMC Guidance on Fixing the Artillery," dated 130926z Aug 99.
5. Jonathon B.A. Bailey, "The First World War and the Birth of The Modern Style of Warfare," Strategic and Combat Studies Institute's Occasional Paper Number 22 (Camberley, England: British Staff College), November 1996.
6. Major General Carl F. Ernst, USA, "Is the FA Walking Away from the Close Fight?"(*Field Artillery,* September-October 1999).
7. Interview.
8. "Artillery OAG Charter," as approved by by LtGen Emil R. Bedard, Plans, Policies and Operations, Headquarters, Marine Corps, Washington, DC, dated July 2000.
9. Interview.
10. Bailey.

TLP for Light Company Fire Support Planning for the Defense

By Sergeant First Class Jeffrey A. Mubarak

The modern-day fire supporter must use troop-leading procedures (TLP) to systematically complete all preparations for light company defensive operations in a timely manner. Priorities of work, when combined with TLP, organize and unify the efforts of maneuver forces and fire support.

Experiences at the Combat Training Centers (CTCs) have proven that forces in defensive operations must develop effective, integrated, executable fire support plans in time-constrained environments. This article provides techniques for incorporating priorities of work into the the nine TLP to manage the limited time available to prepare for the company defense. The performance checklist in this article is intended to help the light force develop a fire support standing operating procedures (SOP) for the company defense (Figure 1 on Page 32).

1. Receive the warning order (WARNO). After receiving the WARNO, the company fire support officer (FSO) and fire support NCO (FSNCO) begin planning fire support with the company commander. While the company commander is responsible for integrating fire support and other battlefield operating systems (BOS) into the fight, it's the FSO who must develop the fire support plan to support the company.

The FSO and FSNCO begin parallel planning when they receive the WARNO from battalion. The FSO can't afford to wait for the battalion operations order (OPORD) to be issued to begin preparing for the defense. To maximize the time available, the FSO informs the fire support team (FIST) of the upcoming mission, issues instructions to the FSNCO and directs the forward observers (FOs) to conduct pre-combat checks (PCCs) and resupply missing items. While the FSO attends the battalion OPORD briefing, the FSNCO develops a hasty fire plan to cover the company's movement into the defensive area of operations (AO) and completes the PCCs.

2. Receive the mission. The battalion OPORD describes how the company supports the battalion's mission. The battalion fire support products provide the company FSO fire support guidance, the assets he has available and essential fire support tasks (EFSTs) his team will be responsible for accomplishing. The FSO gets the fire support products from the battalion fire support element (FSE).

Before departing the OPORD briefing, the company FSO must understand the battalion commander's intent, concept of the operation and the fire support guidance to prepare an effective, integrated and executable fire support plan in a timely manner. Top-down fire planning requires fire support personnel clearly understand the mission, intent and concept of the operation of higher headquarters two levels up.

Once the battalion OPORD briefing is complete, the company commander and FSO begin developing a tentative time line to accomplish the EFSTs, for example, registering and adjusting fire support assets onto the targets. The FSO submits requests for information (RFIs) and the company mortar section's current status to the battalion FSE.

The FSNCO completes the PCCs and pre-combat inspections (PCIs) before the company WARNO is issued. The PCIs identify for the FSO the FIST's capabilities and limitations for the operation.

3. Issue a WARNO. The FSO participates in the company warning order. The FIST personnel and the mortar section leader receive a briefing on the mission, operations in the company sector and assets available to the company.

The FSO issues the tentative time line cataloging all tasks to be completed in sequential order.

4. Make a tentative plan. The FSO updates the company's mortar section status and FIST status. The FSO must understand his units' responsibilities and allocations to accomplish the mission. The company commander must provide clear guidance for fire support. *FM 7-10 The Infantry Rifle Company* and *FM 6-71 Tactics, Techniques and Procedures (TTP) for Fire Support for the Combined Arms Commander* provide doctrinal explanations of fire support guidance.

The FSO merges the company and battalion fire support guidance to develop the company EFSTs, the observation plan and the ammunition management plan or attack guidance matrix (AGM). These three products provide the framework for the fire support plan. When developing the plan, the FSO includes all fire support assets available to the company, including company mortars for the dismounted fight. The plan also provides for refining targets dictated by the higher headquarters.

To help in withdrawals and counterattacks if the company's defensive positions are overrun, the FSO plans mortar fires forward of, on top of and behind

1. After Receiving the WARNO from Battalion:

FSO and company commander begin planning early movement, positioning and security.
FSNCO begins PCC/PCI and resupply.
FSO informs the FIST and mortar sections of the new mission.
FSO, FSNCO or FOs develop the hasty fire plan for movement to the company defensive AO.

2. Receive the Mission:

FSO updates the friendly and enemy situations.
FSO determines the assets available, allocations and FSCMs.
FSO obtains the battalion TLWS, FSEM and AGM.
FSO understands the battalion/task force fire support plan and how it affects the company.
FSO identifies the specified and implied fire support tasks for the company.
FSO briefs the commander on the above tasks.
FSO receives the commander's restated mission and guidance for fire support.
FSO identifies the tasks to be completed and develops the priority of work in preparation for the defense.
FSO reports the FIST and mortar status to the battalion FSE.
FSO or FSNCO requests mortar ammunition through the company XO.
FSO begins making tentative plans with the company commander.
FSO or FSNCO submits requests for information to the battalion FSE.
FSNCO completes the PCC/PCI.

3. Issue a WARNO:

FSNCO, FOs and RTOs receive a briefing on the company mission and AO.
FSO issues a WARNO to the FIST and mortar section leaders on fire support-specific issues.
FSO issues a tentative company fire support time line, including all critical tasks and the priority of work.

4. Make a Tentative Plan:

FSNCO attaches the operations and obstacle overlays to the map.
FSO, FSNCO, FOs and mortars are involved in the planning process.
FSO and FSNCO list the specified and implied tasks to be accomplished by fires.
FSO and FSNCO develop the company EFSTs.
FSNCO plots all battalion targets.
FSO and FSNCO determine what part of the commander's guidance the battalion targets account for.
FSNCO plots targets on the overlay to account for the remaining commander's guidance.
FSO and FSNCO plan fires on and behind the company positions.
FSO advises the commander if the tasks can be accomplished with the available assets and allocations.
FSO and FSNCO determine the Task, Purpose, Specific Methods and Effects desired for each target.
FSO and FSNCO develop the TLWS and FSEM.
FSNCO coordinates the times to register and adjust indirect fires in support of the company mission.
FSO coordinates with adjacent units and the supported unit to refine and finalize a backward time line tailored to the company and battalion time lines.
FSO disseminates the time line to subordinate units and higher headquarters.
FSO and FSNCO develop the observation plan and AGM with the mortar section leader.
FSO and FSNCO develop the scheme of fires for the company.

5. Initiate Movement:

FOs maintain battlefield observation.
FSO or FSNCO coordinates the gains/losses of FOs due to task organization.
FSO, FSNCO and FOs conduct map terrain analysis in preparation for the leader's reconnaissance.
FSO or FSNCO requests Met messages for the mortar section every two to four hours.

6. Conduct Reconnaissance:

FSO accompanies the maneuver leaders on recon.
FSNCO ensures the FOs accompany their platoon leaders on recon.
FSO and FOs verify the target locations, trigger points and observation plan.
FSO and FOs refine the targets to within 10 meters.
FSO and FOs identify the observer positions (primary and alternate).
FSO provides instructions to the FOs (movement, security, etc.)
FSO, FSNCO and the mortar section sergeant identify the mortar firing positions (primary and alternate).
FOs mark the trigger points for ease of identification.

7. Complete the Plan:

FSO, FSNCO and FOs modify the plan, as necessary, and inform key leaders of the changes.

FOs establish the triggers for day and night operations.

FSO transmits the locations of friendly positions and TLWS to battalion FSE.

FSO completes the ammunition management plan for the company mortars (attack criteria, AGM, number of rounds for adjustments and number of rounds for FPF).

FSO receives approval for the scheme of fires.

FSNCO briefs the FIST on the scheme of fires.

FSO rehearses and briefs the commander on the fire support plan.

FSO requests a censor zone over the company mortars, if the company is the forward element in the battalion.

FSO or FSNCO receives Met messages and (or) updates them every two to four hours.

FSO and FSNCO completes the TLWS, FSEM and fires portions of the company OPORD.

8. Issue the OPORD:

FSO briefs the fires paragraph of the OPORD.

FSO ensures the mortar section leader and FOs attend the company order, if possible.

FSO disseminates all fire support products to the platoon leaders (FSCM, TLWS and AGM).

FOs brief the fires paragraph to the platoon's key leaders; if the FO is positioned forward, the FSO or FSNCO briefs.

FOs back-brief fires when their platoon leaders back-brief the company commander.

9. Supervise:

FOs register the company mortars and other necessary assets.

FOs adjust their indirect fires assets onto the priority targets.

FSNCO ensures the mortar section receives concurrent Met messages every two to four hours.

FSO conducts the fire support rehearsal (include FOs, FIST headquarters personnel, mortar leaders and key leaders from the maneuver element, the latter if possible).

FSO employs vehicles to rehearse the mounted target triggers.

FSO lays the mortar onto targets as addressed during the rehearsal.

FSO and FSNCO integrate fire support personnel into the company and battalion rehearsals.

FSO continues to refine targets and triggers for the obstacle emplacement, defense of the TAA, etc.

FSO continues to update and coordinate changes to the plan, as necessary.

All personnel complete the construction of their survivability/fighting positions.

Legend:

AGM = Attack Guidance Matrix
AO = Area of Operations
EFSTs = Essential Fire Support Tasks
FIST = Fire Support Team
FO = Forward Observer
FPF = Final Protective Fires
FSCM = Fire Support Coordinating Measures
FSE = Fire Support Element
FSEM = Fire Support Execution Matrix
FSNCO = Fire Support NCO
FSO = Fire Support Officer
Met = Meteorological
OPORD = Operations Order
PCC = Pre-Combat Checks
PCI = Pre-Combat Inspections
RTO = Radio-Telephone Operator
TAA = Tactical Assembly Area
TLWS = Target List Worksheet
WARNO = Warning Order
XO = Executive Officer

Figure 1: FSO Troop-Leading Procedures for Planning and Preparing for Light Force Defensive Operations. In the event that the FSO is unavailable, the FSNCO must be prepared to accomplish all FSO tasks. (Information taken from *FM 6-20-10 The Targeting Process, FM 6-20-20 Fire Support at Battalion Task Force and Below, FM 6-30 Observed Fire, FM 7-10 The Infantry Rifle Company, FM 7-90 Tactical Employment of Mortars, FM 5-103 Survivability, FM 101-5 Staff Organization and Operations* and "Fire Support for Brigade and Below," a US Army FA School White Paper, May 1998.)

company positions. The FSO coordinates with the company mortar section sergeant and establishes the number and type of rounds to be fired on planned targets and for adjustments. The amount of mortar ammunition on hand and the commander's fire support guidance influences indirect fire adjustments onto targets, attack criteria and the AGM. Dismounted enemy, armored and soft-skinned vehicles and final protective fires (FPFs) are considered when allocating ammunition.

Early in planning, the company FSO coordinates a time for adjusting indirect fires with his supported element, adjacent units and higher headquarters. The FSO refines and finalizes the company's fire support time line, ensuring it coincides with the battalion's time line and accomplishes all essential tasks.

The following are essential tasks that always are present in the company fire support time line in the defense: register mortars, adjust indirect fires onto priority targets, rehearse fire support, conduct the fire support coordination meeting and establish the target refinement cutoff time. (The FSO's company target refinement cutoff time must meet the battalion FSE's target refinement cutoff time.) The FSO's coordination meeting ensures the fire support plan is integrated and synchronized with the obstacle plan and company maneuver plan.

Once approved by the company commander, the fire support time line is disseminated to all subordinate elements and the battalion FSE.

5. Initiate movement. The FOs maintain battlefield observation and continue to prepare for the leader's reconnaissance patrol by conducting a detailed map study of the platoon and company area of operations. The map recon identifies possible dead space, mounted and dismounted avenues of approach, and other areas of concern.

The FO and platoon leader confirm the areas of interest identified by the map recon during the reconnaissance patrol.

The company FSO coordinates task organization changes, such as a combat observation lasing team (COLT) operating in the company sector or the FOs being attached to other companies.

6. Conduct reconnaissance. The FSO accompanies the company commander and platoon leaders on the leader's reconnaissance patrol. Whenever possible, the FOs accompany their respective platoon leaders. In a time-constrained environment, parallel planning occurs at all possible levels, to include the platoon level. During the leader's reconnaissance patrol, the FSO and FOs identify observer positions (OPs), refine the planned target locations to within 10 meters using a precision lightweight global positioning system receiver (PLGR) or other precision target location devices and verify the task and purpose of each target.

Instructions to the FOs include all information pertinent to the observer's assigned EFSTs. The FSO integrates maneuver observers into his company's observation plan, thus multiplying the number of eyes available to observe the battlefield and help employ fire support assets. However, he uses trained observers for brigade- or battalion-directed obstacles. When possible, the FSO releases the observers to establish their OPs and develop triggers, once they understand their assigned tasks, the communications net, the company scheme of maneuver and the assets available.

The FOs identify the trigger for each target in accordance with the method described in *FM 6-30 Observed Fire Procedures*, Chapter 5, Page 5-23, Section IV. During defensive operations, a trigger is normally a spot on the ground. This section of the manual offers a simple sequence for engaging moving target and developing trigger points. The formula for determining the trigger point is "transmission time + the time of flight x the expected speed of the target in meters per second = the distance from the intercept point or planned target location." Triggers are developed for both mounted and dismounted targets.

One observation method is to position the observer forward of friendly troops to trigger the target as the enemy passes the observer's location. Another means is coordinating with forward maneuver units or maneuver listening posts/OPs (LP/OPs) to observe and trigger targets.

The observer marks the trigger for day and night operations. Infrared chem lights are a good marking tool for night operations. Engineer tape nailed to the observer's side of a tree works well for daylight missions.

The mortar section's firing position is identified during the leader's reconnaissance patrol. Depending on the mission, enemy, terrain, troops and time available (METT-T), the FSO selects the mortar firing positions using the"1/3, 2/3 Rule." This means the mortars are positioned to fire one-third of their range behind the company position and two-thirds forward of the company position. This technique allows the company to withdraw to an alternate or supplementary position and be covered by the mortar section without displacing the mortars. (See Figure 2.)

7. Complete the plan. After the leaders' reconnaissance, the FSO should understand how the commander will establish the company defensive position. He sends all friendly element and FO locations to the battalion FSE as the company begins occupying positions. The FSO also informs the battalion FSE of the company observation plan for all FOs and maneuver observers. Maneuver observers can trigger targets if they understand the task, purpose, method and effects desired for their targets and have a workable plan for communications.

If the company defensive sector is forward in the main battle area, the FSO requests a Q-36 Firefinder radar censor zone over the company mortar position. This should keep friendly counterbattery fires from engaging the mortars in the heat of the battle.

If ammunition and time are available, then the mortars should register as soon as possible. In a time-constrained or ammunition-constrained environment, registering and adjusting company mortars onto priority targets may not be possible. If registration is not possible, a Met message increases the accuracy of the mortars. The FSO has requested a Met message and updates every two to four hours for the company mortars. The mortar section enters its Met update into its mortar ballistic computer (MBC).

The company mortar registration point is a minimum of 1,500 meters from the mortar position. The registration point is center of mass of the company sector and forward of friendly troops.

The mortar registration point is only valid for targets 800 meters over, 800 meters short of, 400 mils to the left of and 400 mils to the right of the registration point. Any targets outside of the valid registration area require an additional registration point. These considerations could require the FSO to adjust ammunition requests, tasks for mortars and the company fire support time line. (See Figure 3.)

Once the observers are in position, they conduct communications checks with the FSO, other FOs, the company mortar section, the battalion mortar platoon, the battalion FSE and the artillery fire direction center (FDC). The FIST maintains communications with all these elements in the event the battalion headquarters sustains casualties and is unable to control the battle.

The FSO and FSNCO complete the fire support plan, target list worksheet (TLWS) and the fire support execution matrix (FSEM). The FSO then briefs the fire support plan to the company commander before the commander issues the company OPORD.

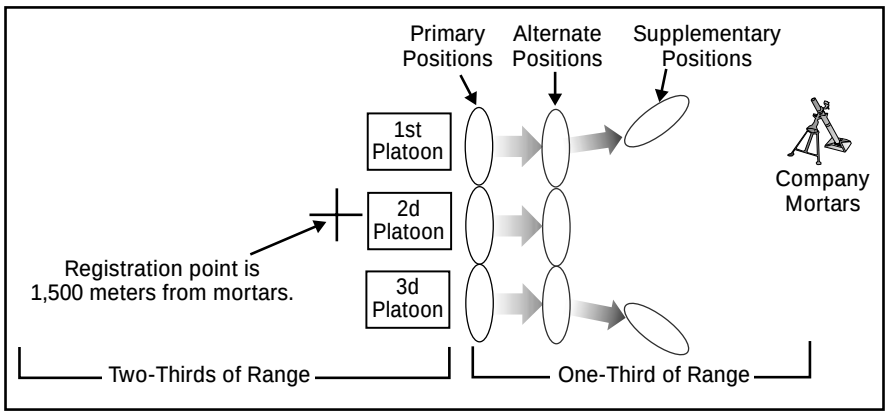


Figure 2: One-Third/Two-Thirds Rule. The mortar should be able to fire one-third of its planning range behind the company position and two-thirds forward of the company position. This technique allows the company to withdraw to the alternate or supplementary positions to be covered by the mortar section without displacing the mortars.

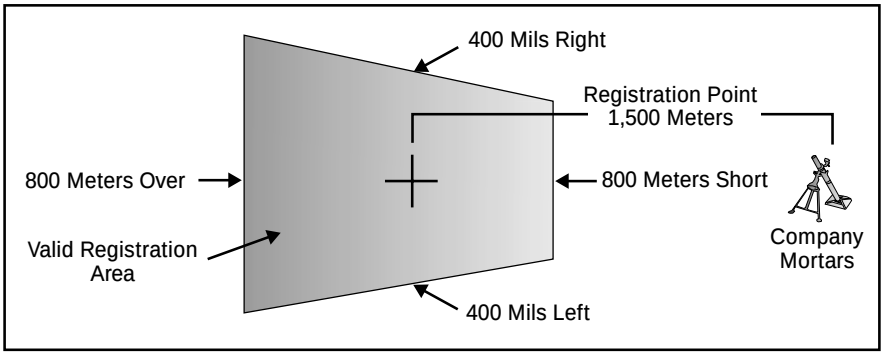


Figure 3: Targets outside the valid registration area require additional registration points, which adjusts the ammunition requests, tasks for mortars and time line.

8. Issue the OPORD. The FSO distributes fire support documents to the platoon leaders and briefs the fire support portion of the company OPORD. He briefs the task, purpose, method and effects desired for every target; the observation plan and how it will affect the company; who the primary and alternate observers are; and what event will trigger each target. In the briefing, he explains how requests for indirect fires will be cleared in the company and across the battalion.

The FOs brief their squad leaders on the fire support plan. If an FO is positioned forward early, the FSNCO briefs the FO's squad leaders.

The FSEM is the best tool used to disseminate information to the platoon level. *FM 6-20-20 TTP for Fire Support at Battalion Task Force and Below*, dated 27 December 1991, explains in detail what should be contained in the company FSEM. The FSO explains the attack guidance, engagement criteria and the high-payoff target list (HPTL), informing the company's key leaders what type of targets will be attacked, when they will be attacked and what assets will engage them.

He also identifies what event shifts the priority of fire to the company or the hand over line. *FM 101-5-1 Operational Terms and Symbols* describes hand-over line as a control feature, preferably along easily identifiable terrain features, at which responsibility for conduct of combat operations is passed from one force to another.

In the briefing, the FSO describes the scheme of fires, assigned EFSTs, the TLWS, and actions to be taken if all senior fire support personnel are lost (FSO, FSNCO and FOs). The FSO also disseminates frequencies and call signs for all assets in support of the battalion, to include Air Force, Navy and Army aviation, so the company can continue to employ fire support weapon systems if the fire support personnel have become casualties.

The FSO explains the list of fire support coordinating measures (FSCM) and how they will affect the company. He advises the company of when enemy fire support assets are expected to be within range of the company positions and what capabilities the enemy has. If adverse weather is expected, the FSO provides the effects weather could have on fires.

9. Supervise. The FSO and FSNCO supervise all fire support preparations. The FSO or FSNCO supervises the adjustment of indirect fire assets in the company sector. All adjustments should be completed during daylight hours.

Adjustments must be accurate due to the close proximity rounds will impact to friendly troops. To minimize endangering friendly forces when adjusting indirect fire, the company troops construct survivability positions as early as possible. A minimum of 18 inches of overhead cover is required to protect troops from 81-mm mortar munitions (*FM 5-103 Survivability*).

A good technique for reducing the impact of adjusting indirect fires close to friendly positions is to incorporate the adjustment time later in the time line. This technique of waiting until the unit has semi-completed its positions allows the maneuver element to continue preparing for the defense outside of the effects pattern of indirect fires while maintaining security in the company area from its fighting positions. Another technique is to use delay fuzes to decrease friendly unit exposure to fragmentation during danger close adjustments.

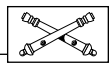
The FSO then conducts a fire support rehearsal. It involves the FIST and the company mortars, at a minimum. The rehearsal highlights what event causes each observer to trigger each target (in a sequential manner). The FSO can use a vehicle to rehearse triggers for mounted targets.

The FSO walks through fire support during planned displacements from the primary defensive positions to the alternate or supplementary defensive positions. The mortars lay on each mortar target as it is being discussed in the rehearsal.

The FSO then incorporates fire supporters into the company rehearsal. *FM 101-5 Organization and Operations*, Appendix G, gives the details of conducting rehearsals. The FSO ensures the company fire support and maneuver key leaders understand the EFSTs and how these tasks will be accomplished.

During the battle, one technique is for the FSO to operate on the battalion mortar net while the FSNCO monitors and controls observers on the company mortar net. The FSO and FSNCO continuously refine and update changes to the plan required by higher headquarters or subordinate elements until they receive the next mission. The FIST personnel stay prepared to consolidate or reorganize as the main battle passes by the company.

Company fire support personnel use integrated TLP and priorities of work to systematically complete all defensive preparations in a timely manner. By employing these and other techniques routinely in training, fire supporters will be able to provide their maneuver units fast, accurate fires routinely on a high-tempo battlefield.



Sergeant Fire Class Jeffrey A. Mubarak has been a Company Fire Support Observer/ Controller at the Joint Readiness Training Center, Fort Polk, Louisiana, since June 1999. He also served as a Battalion S3 Air NCO, a Battalion Fire Support Sergeant, Company Fire Support Sergeant, Forward Observer and Combat Observation Lasing Team (COLT) Sergeant in the 1st and 2d Battalions of the 319th Field Artillery, and the Long-Range Surveillance Detachment (LRSD), all in the 82d Airborne Division, Fort Bragg, North Carolina. Sergeant Mubarak was a Forward Observer and Company Fire Support Sergeant in the 2d Battalion, 11th Field Artillery, 25th Infantry Division (Light) at Schofield Barracks, Hawaii. Among other schools, he is a graduate of the Field Artillery Advanced NCO Course at the NCO Academy, Fort Sill, Oklahoma; the Joint Firepower Control Course at Hurlburt Field, Florida; and the Naval Gunfire Spotters Course at Little Creek Amphibious Base, Virginia.

Planning Fires for Brigade Success

Simple, Well Rehearsed and Violently Executed

By Colonel William L. Greer

Combined arms operations are the key to success at the Joint Readiness Training Center (JRTC), Fort Polk, Louisiana. Infantry-on-infantry is a costly way to do business. As the integrator of fires (lethal and nonlethal), fire supporters provide our maneuver commanders the combat power to succeed.

Fire planning must support the commander's scheme of maneuver and defeat mechanism for the enemy. To start the process, we must pull concise guidance from the commander and then translate it into essential fire support tasks (EFSTs)—eventually, each will have a Task, Purpose, Method and Effects. This article provides some tools for a brigade fire support officer's (FSO's) kit bag to simplify fire planning during the military decision-making process (MDMP): Receive the Mission, Analyze the Mission, Issue a Warning Order (WARNO), Commander Determines Intent and Guidance, Develop Courses-of-Action (COAs), Wargame the COAs, Commander Decides on the COA, Brief Operations Order (OPORD), Rehearse and Execute.

Extracting the Commander's Guidance. Fire planning is a continuous process that's energized with renewed fervor upon *Receipt of a Mission.* The fire support coordinator (FSCOORD) and FSO then provide the combined arms commander critical information during *Mission Analysis.* They identify the resources available to the commander early in the process to ensure the plan includes them in the operation. Mission analysis begins to identify all requirements placed on the brigade by higher headquarters.

Perhaps the most important information identified in mission analysis is the EFSTs. The FSCOORD and maneuver commander develop the Task and Purpose for the draft of the EFSTs in the brigade commander's initial guidance for fire support during the upcoming operation. "Task and purpose" is a familiar format for the brigade commander as he uses this format to develop his initial brigade guidance. This information will be in the *WARNO* he issues and is the heart of the *Commander's Intent and Guidance*.

In some instances, the brigade commander won't provide usable guidance. For example, he might say, "Insert the Q-36 radar early," which doesn't give enough information to execute the task and achieve the commander's intent. Often, fire supporters will need to walk the commander through what he wants and then translate that into what indirect fires can provide.

A FSCOORD or brigade FSO can help the commander provide concise fire support guidance by asking him leading questions about the operation. For example if the commander says he wants "the Q-36 inserted early," the FSCOORD could ask "Why early?" and "To do what?" to discover the Task and Purpose. The brigade commander might explain that he's worried about the enemy surrounding the flight landing strip (FLS) with 81-mm mortars and preventing the friendly engineers from improving the airfield for follow-on forces. The commander's bottom line is he wants to limit the 81-mm mortar's capabilities to interdict engineer FLS improvement operations.

Therefore, the Task and Purpose for this phase of the operation is stated as, "Limit the enemy's ability to use his mortars, thus allowing our engineers and infantry the freedom of maneuver to clear and repair the FLS." "Insert the Q-36 radar early" is part of the Method to accomplish the Task and Purpose.

With this information, the FA battalion can begin parallel planning with the brigade, focusing on supporting the brigade's critical tasks. (See the Fort Sill white paper "Fire Support Planning for the Brigade and Below," 12 May 1998.)

Refining EFSTs. With the initial guidance to focus his efforts, fire supporters immediately can transition to *COA Development* in the MDMP. COA development focuses primarily on refining the Task and Purpose part of the EFSTs and adding any EFSTs peculiar to the COA under consideration.

In the example, the brigade will conduct an airborne (or air assault) operation to secure the FLS before the engineers repair the airfield. This mission requires suppression of enemy air defenses (SEAD) to facilitate insertion of the brigade combat team (BCT). The additional EFST Task and Purpose could read "Disrupt enemy air defenses with SEAD to allow aerial freedom of maneuver for our assault aircraft enroute and at the landing zone."

As we finish the COA development phase, we have a clear vision of how fires will be used to influence the battle. A good technique to ensure the FSCOORD or FSO understand the initial guidance before moving on is for the

FSCOORD or FSO to back brief the brigade commander on the vision of how fires will support the scheme of maneuver.

At the end of COA development, the brigade publishes another WARNO to subordinate units, identifying their tasks and responsibilities for executing the brigade's probable plan—the plan that is an "80 percent solution."

In *Wargaming*, fire supporters begin to flesh out the Method and Effects portions of the EFSTs with detail. The Method describes how the Task and Purpose will be achieved while Effects portion attempts to quantify the successful accomplishment of the Task. As we wargame, we spend the time and resources necessary to completely develop the COA against an enemy that will do his best to accomplish his mission. EFSTs should clearly plan for both lethal and nonlethal fires.

Integrating Targeting. The FSCOORD and FSO must integrate targeting into the MDMP. The resulting maneuver and fire support plans then will determine what targets or capabilities must be attacked, how to detect them, what munition to deliver, what defines success and how to determine success.

Wargaming refines the Method used to achieve the objectives. It is the part of the MDMP in which fire supporters identify engagement areas (EAs) and target areas of interest (TAIs), including groups and series of targets. The reconnaissance and surveillance (R&S) plan is the key to synchronizing targeting with the fire support plan. Named areas of interest (NAIs), triggers for engagement and other observation plan requirements must support the fire support plan.

Sensor-to-shooter linkages should be identified in enough detail to ensure fires can be delivered at the critical place and time. If multiple shooters will have to call for fires from the same assets simultaneously, the plan has a problem. In the wargaming and COA decision portions of the MDMP are the times to resolve the problem by getting additional assets or sequencing fires differently; fire supporters won't be able to deconflict multiple calls for the same assets during the heat of battle.

The Method also should identify and plan the movement of fire support assets, such as combat observation lasing teams (COLTs). The FSO should keep a running total of munitions for the FA battalion S3 to ensure the plan is supportable from a logistical standpoint.

Once the COAs are wargamed and the *Commander Decides on a COA*, the maneuver commander and FSCOORD have a clear vision of how fires will influence the operation. This information is covered in the *OPORD Briefing*.

The brigade fire support element (FSE) clearly articulates the fire plan in the fires paragraph of the OPORD: the fire support execution matrix (FSEM); the target synchronization matrix (TSM), which includes the high-payoff target list (HPTL); the attack guidance matrix (AGM); and the target list. Target selection standards (TSS) also must be developed and disseminated as part of the modified TSM or as a separate document to confirm what sensors are acceptable as target sources vice target indicators.

If the wargame is done correctly, the fires paragraph of the OPORD tells subordinate maneuver commanders their responsibilities for executing the brigade's plan. Also, the FSEM is in sufficient detail for subordinate FSEs to understand and use it as a tool for rehearsing fire support (and combined arms) operations as well as for executing the fire plan. These documents and the rehearsal process provide a clear understanding of the scheme of fires.

Rehearsing and Executing. As the unit publishes the OPORD, the fire supporter's job is really just beginning. *Rehearsing* the plan is critical to successful execution.

Colonel James T. Hill, Commander of the 1st Brigade, 101st Airborne Division (Air Assault) [currently Lieutenant General Hill, I Corps Commanding General, see the interview in this edition] discussed his unit's successful operations during Operation Desert Storm. He said the key to success is "Detailed, yet simple plans, rehearsed to the point everyone understands his piece in the fight and is confident in his ability to execute and then decentralized execution."

As the Senior Observer/Controller at the JRTC, I often ask unit commanders in rotations if they would execute a danger close live fire without rehearsing it. Most would not consider it. So, why do so many units fail to rehearse fires for simulated combat at the JRTC—leave it out of training for actual combat? The simple plan must be well rehearsed before the brigade can violently execute it with success.

The FSO facilitates the brigade fire support rehearsal using the FSEM. He covers in detail the execution of the observer plan and communications network. Each observer must clearly understand his task and purpose, have an established trigger, know the engagement criteria—in other words, know the "who, what, when and how" to deliver the required fires.

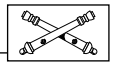
As fire supporters plan and rehearse fire support, they must never forget the enemy will have "a vote" as to the effectiveness of the plan during execution. Fire supporters must build flexibility into each plan to deal with branches and sequels as required in reaction to the enemy.

If the fire plan is simple and rehearsed in detail, it can succeed—even when the enemy's main effort appears where the brigade expected his supporting effort.

Conclusion. Keys to success at the JRTC are really straightforward. Early, clear commander's guidance helps focus fire supporters development of EFSTs and enables the FA battalion to conduct parallel planning. Throughout the MDMP, fire supporters further develop and refine the EFSTs, keeping the plan simple, integrating targeting and building in flexibility. Once the fire plan is understood and rehearsed by all, indirect fires will be able to quickly shift across the battlefield to deal with the enemy's chosen COA.

Fire supporters must remember six words—"simple plan, well rehearsed, violently executed." They are the essence of fire planning for success.

JRTC Fire Support Home Page:
www.jrtc-polk.army.mil/fsweb



Colonel William L. Greer is the Senior Fire Support Observer/Controller (O/C) at the Joint Readiness Training Center (JRTC), Fort Polk, Louisiana, where he also served as the Senior Brigade Fire Support O/C. He commanded the 3d Battalion, 320th Field Artillery, the direct support battalion for the 3d Brigade (Rakkasans) of the 101st Airborne Division (Air Assault) and served as the Executive Officer (XO) of the 101st Division Artillery at Fort Campbell, Kentucky. He has also commanded C Battery, 3d Battalion, 18th Field Artillery, part of the 17th Field Artillery Brigade, III Corps Artillery, Fort Sill, Oklahoma. Other assignments include serving as Brigade Fire Support Officer and XO of the 2d Battalion, 7th Field Artillery, 10th Mountain Division (Light Infantry), Fort Drum, New York. He is a graduate of the Army War College, Carlisle Barracks, Pennsylvania. Colonel Greer will take command of the 101st Division Artillery this summer.

Fires in Kosovo
Relevance in Peace Support Operations

By Lieutenant Colonel Kevin P. Stramara
and Majors Michael W. Griffith and Patrick M. Antonietti.

Every soldier on patrol in Kosovo will have the ability to call for and receive fire support.

Danger 6, Major General John P. Abizaid
Commander, 1st Infantry Division (Mechanized), Kosovo

"Dateline—Bright Sky I, 29 December 1999, Kamenica, Kosovo. As a Russian Kosovo Force BTR-80 [armored personnel carrier] occupied its position at Checkpoint 36 near Kamenica in this predominantly Serbian area, the BTR hit a mine placed in its routine position. Albanian extremists recently had mined roads in an attempt to limit the mobility of Serbian Kosovars and force them to leave this part of the war-torn province for Serbia.

"This attack followed the death of a US Special Forces liaison sergeant on 16 December who had hit a mine moving between two predominantly Serbian towns in the Russian sector of Kosovo…"

The commander of Task Force (TF) Falcon and Multinational Brigade-East (MNB-E) wanted an immediate response to the mining of a Russian checkpoint. He ordered a Paladin live-fire demonstration to show task force resolve and unity and demonstrate interoperability between Russian and US forces.

TF 1-6, US forces in Kosovo (USKFOR) Force Field Artillery Headquarters, providing direct support (DS) fires for TF Falcon (see Figure 1 for task organization), moved a firing platoon from B Battery within range of Checkpoint 36. After coordinating with Russian liaison officers (LNOs), the battery commander led his platoon into position, and Special Forces observers occupied observation posts overlooking the checkpoint. Tactical satellite (TACSAT), FM and digital communications were established among TF Falcon headquarters, the observers from the KFOR Special Operations Command Coordination Element (SOCCE), the TF 1-6 tactical operations center (TOC) and the battalion jump TOC established at Camp Monteith to provide forward command and control.

The commander of 1-6 FA, the *Swift and Bold* battalion, moved forward into the Russian sector with the battery to coordinate with the Russian commander on the ground. The S3 moved forward with the jump TOC, and the battalion executive officer took control of the main TOC at Camp Bondsteel.

The brigade fire support officer (FSO) operated from within the TF Falcon TOC with Special Forces and Russian LNOs. Q-36 and Q-37 Firefinder radars from E/151 Target Acquisition Battery (TAB), Minnesota Army National Guard, provided redundant coverage across the area of operations. Airspace clearance was established through TF Falcon G3 Air and the KFOR headquarters in Pristina.

Within hours, the TF Falcon fire support team had completed its essential fire support task (EFST): "Provide illumination fires over the mined checkpoint to dissuade further action by Albanian extremists against Russian forces in the USKFOR sector and demonstrate TF Falcon unity, interoperability and resolve." US SOCCE observers directed the firing of 30 harassment and interdiction illumination rounds over Russian KFOR checkpoints for three and one-half hours.

Although measuring the effects of these fires is difficult, it can be surmised that fires played an integral role in reducing mine strikes as no additional mine strikes occurred in the Russian sector in the next six months. This article outlines the relevance of fires for peace support operations as shown by their application in Kosovo and the tactics, techniques and procedures (TTP) for clearing fires and securing firing units.

Why use fires in Kosovo? Although every peace support operation is unique and has its challenges, the environment in Kosovo was unstable and complicated by the political situation and continued ethnic tensions. In the first six months of the US presence in Kosovo, 15 times as many violent acts occurred in Kosovo as had occurred in Bosnia in the same time frame. Some speculated that this high level of violence was because "they weren't tired of fighting yet" like they were in Bosnia. No matter the reason, TF Falcon had to operate in a dangerous environment.

Demonstrations of military capabilities and interoperability became a critical method to dissuade Albanian and Serbian extremists from perpetrating violence. After the TF 1-6's first mis-

sion in support of the Russians, live artillery fires became a viable way to affect the entire spectrum of operations—tactical, operational and strategic—to provide a safe, secure environment in Kosovo.

The key to planning and using fires in this peace support operation was to establish a viable purpose for the fires in support of TF Falcon operations. KFOR fires had a variety of purposes, but the basic task of fire mission processing remained the same. (See Figure 2.)

Bright Sky Operations. Bright Sky Operations were initiated when the TF Falcon commander ordered TF 1-6 to conduct harassment and interdiction illumination fires in the Russian sector of MNB-E. These fires served a dual purpose: To deter future attacks by demonstrating presence and demonstrate TF Falcon unity and resolve to support the Russian members of MNB-E.

Approximately one week later, again in the Russian sector, TF 1-6 FA conducted a second operation to further demonstrate unity in MNB-E. This operation led to a discovery: Serbian radio operators observing the illumination rounds in Kosovo transmitted reports about the fires. This discovery led to a second purpose for fires: To generate signal intelligence (SIGINT) collection to allow TF Falcon to identify communication nodes in its area of responsibility (AOR).

This purpose generated the next four Bright Sky Operations (see Figure 3). The *delivery* of these fires allowed a myriad of collection assets (TRQ-32, Guard Rail and TRQ-17) to *detect* possible hostile activity within MNB-E. From the *assessment* of this intelligence, the TF Falcon commander further *decided* when, where and how to use artillery fires. Clearly, this information proved valuable at all levels.

A bombing of a Serbian church in the town of Cernica led to a third purpose for Bright Sky Operations: To prevent extremist activities from unhinging peace negotiations. Albanian extremists attacked and destroyed the only Serbian church in this ethnically mixed and volatile village to deter Serbian leaders from planned talks with Albanian moderates. These talks had been negotiated by the TF 2-2 IN commander and were critical to reducing tensions in the area.

After the church was bombed, the 2-2 IN commander requested illumination fires two days before the next scheduled meeting between the Albanians and Serbians. The fires were to deter another night bombing attack during the critical days before the meeting and demonstrate the presence of KFOR patrols in the area. Again, specific effects are difficult to ascertain, but the meeting did occur between the Albanian and Serbian parties and no further violent attacks occurred after the illumination fires near the destroyed church.

Another use of artillery fires in Operation Joint Guardian in Kosovo was to demonstrate USKFOR capabilities. A number of the Bright Sky Operations were executed across the AOR with multiple targets, firing units and observers. These operations showed the fires available to TF Falcon and the potential might of its combat power.

Firing units occupied positions on and off base camps. Occupying firing positions "in sector" served to deter further aggressive action by both Albanian and Serbian extremists and sent a strong signal to the Albanian and Serbian political leadership that TF Falcon was a viable, ready combat force.

Illumination fires routinely supported countermortar operations conducted by TF 2-2 IN and TF 1-63 AR. These were planned overt operations conducted in conjunction with specific covert operations to deter further attacks by Albanian and Serbian extremists. Potential hostile mortar firing areas were illuminated while scouts or other maneuver forces observed entrance and exit routes and the target area. These operations also included the 120-mm mortar platoon from TF 2-2 IN to provide additional illumination coverage over potential hot spots.

Another purpose for fires in this peace support operation was to demonstrate interoperability between NATO forces. Fires were planned and executed in support of Spanish, Polish, Italian, Greek and Dutch forces operating in MNB-E. These fires were in addition to the fires in support of the Russian elements operating near Kamenica. The fires also allowed TF Falcon to conduct invaluable training with the militaries of these countries.

In Kosovo, indirect fires became an integral part of every operation and could be relied upon to support soldiers on patrol.

Clearance of Fires. In Kosovo during KFOR 1B, TF Falcon integrated fires fully into operations because of TTP developed to reduce the possibility of collateral damage and civilian casualties. (KFOR "1B" stands for the first

• Camp Bondsteel
(East of Urosevac, Kosovo)
- Task Force Falcon TOC
- TF 1-6 FA (-) DS TF Falcon
  - HHB/1-6 FA
  - A/1-6 FA
  - C/1-6 FA
  - Svc/1-6 FA
  - E/151 TA (-) (1x Q-36, 2 x Q-37)
- TF 82d EN (-)
- TF 709th MP (-)
- TF 1-1 AV

• Camp Monteith
(Near Gnjilane, Kosovo)
- TF 1-63 AR
- TF 2-2 IN
- TF 1 - 6 FA (-) DS TF Falcon
  - FSE TF 1-63 AR
  - FSE TF 2-2 IN
  - B/1-6 FA
  - Section 1/E/151 TA (1 x Q-36)

• Urosevac , *Kosovo*
- TF 1-187 IN (Relieved TF 3-504 IN, March 2000)
- C/3-320 FA (OPCON TO TF 1-6 FA for Firing)

Legend:
AV = Aviation
AR = Armor
DS = Direct Support
EN = Engineers
FSE = Fire Support Element
HHB = Headquarters and Headquarters Battery
MP = Military Police
OPCON = Under the Operational Control of
Svc = Service Battery
TA = Target Acquisition
TF = Task Force
TOC = Tactical Operations Center
IN = Infantry

Figure 1: Task Force Falcon Organization

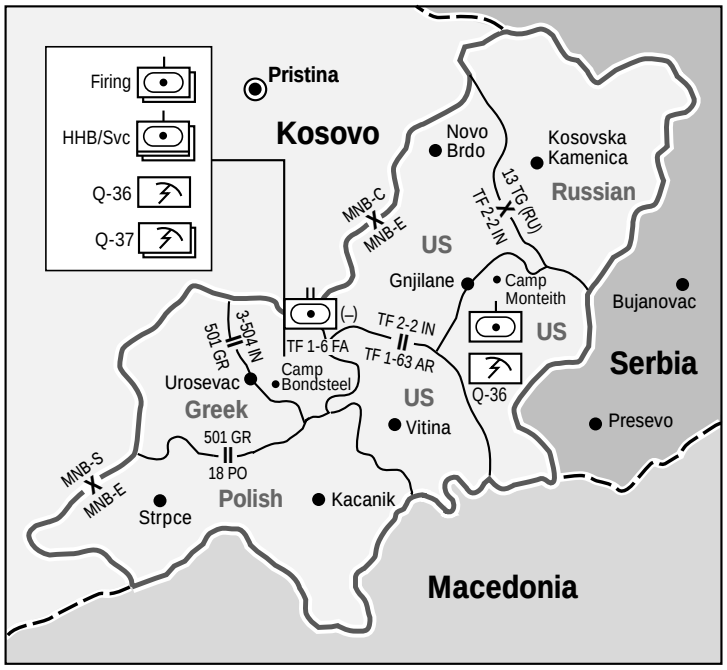
- Demonstrating unity and resolve in portions of the area of responsibility controlled by the multinational force.
- Supporting signal intelligence collection.
- Demonstrating Task Force Falcon's presence and capabilities.
- Validating platoon and company fire plans in support of mounted and dismounted patrols.
- Demonstrating interoperability with NATO forces.

Figure 2: Purpose of Fires in Task Force Falcon Operations

year of operations in Kosovo with the second unit for a six-month deployment—in this case the 1st Infantry Division.)

Initially, all airspace up to 10,000 feet could be cleared locally by the TF Falcon commander. However, in December 1999, the KFOR commander allowed the clearance only to 3,000 feet without direct coordination with KFOR headquarters. This change limited the ability of artillery to fire in the AOR as most of the targets and hot boxes required trajectories above 3,000 feet.

To facilitate more responsive fires and smooth the execution of preplanned Bright Sky missions, TF Falcon established restricted operating zones (ROZs) that could be implemented quickly in the event of an emergency mission or in support of preplanned missions. When in effect, no rotary- or fixed-wing aircraft could enter the ROZ without approval from TF Falcon. This coordination requirement allowed MNB-E to use fires during certain time frames with positive airspace control.



Task Force 1-6 FA supported the Multinational Brigade-East (MNB-E) in Kosovo.

For pre-planned missions, TF Falcon sent ROZ requests to KFOR headquarters 72 hours before the mission. Bright Sky Operations then were cleared for execution during pre-approved time frames to deconflict airspace within the MNB-E AOR. KFOR notified all other MNBs of the ROZ and ensured all rotary- and fixed-wing aircraft were clear of the area through the air operations center (AOC). Internal to TF Falcon, the G3 Air ensured all MNB-E aircraft were clear of the ROZ through normal air control procedures. Therefore, the pre-planned mission could be executed, once the ROZ was in effect and properly disseminated.

However, positive command and control of all aircraft entering KFOR airspace routinely proved difficult. Missions were often delayed due to the inability of other MNBs to ascertain the location of their rotary-winged aircraft and, at times, due to flight patterns of airborne intelligence collection assets, such as Guard Rail or the Hunter unmanned aerial vehicle (UAV). Deconfliction of these assets and their airspace led to delays, and at times, the target location or trajectory of the illumination rounds would have to be altered.

For example, if an aircraft was to remain above 7,000 feet, the target previously planned for high-angle fire to avoid collateral damage may have to be recomputed and cleared (or in some cases relocated) for low-angle engagement to keep the trajectory of the round below 7,000 feet. This detailed airspace management could only be accomplished through close coordination among the TF Falcon fire support element (FSE), G3 Air and KFOR headquarters.

Although KFOR headquarters retained approval authority to fire high-explosive (HE) rounds, the TF Falcon commander had illumination (nonlethal) approval authority. Therefore, the TF could use illumination fires more efficiently and responsively due to no requirement for KFOR approval.

The key to planning fires in this peace support operation was the development of the "hot box." This area is a pre-cleared area around a pre-planned target designed to limit collateral damage yet facilitate clearing and executing timely fires.

Using the automated deep operations computer system (ADOCS) and satellite imagery, TF Falcon selected targets near potential hot spots in the AOR. These target areas did not contain any buildings or structures that could be damaged by the flare, spent projectile or canister of an illumination round.

Before firing, the target area and hot box would be cleared of personnel, often by TFF combat observation lasing teams (COLTs), or maneuver task force fire support teams. Additionally, observers photographed each area to ensure no structures were in the area that had been built after the intelligence imagery had been produced. So, through imagery and "eyes-on" observation, the target area was clear of personnel and potential collateral damage.

These TTP permitted routine, responsive engagement of targets during operations. This technique was highly successful. KFOR 1B fired more than 1,400 illumination rounds in support of TF Falcon operations with no collateral damage.

Coordinated Fires and Nonlethal Effects. In essence, executing artillery fires in peace support operations uses doctrinal methods to move, emplace and fire artillery. However, due to the varying threats a firing battery can face, the coordination required to move a battery into a position area (PA) in support of an operation is more complicated. Different agencies, to include psychological operations (PSYOPs), civil affairs, engineers, military police and public affairs, are employed to gain the full effects of the fires and ensure coordinated action across TF Falcon.

PSYOPs were used in support of preplanned operations to affect the attitudes of the local populace with regards to both the illumination targets and the firing positions of the howitzers. Pamphlets and leaflets were distributed to the local populace in the target area and near the battery positions to gain the full effect from the firing.

Leaflets described the firing as a demonstration of TF Falcon's firepower and that the task force was helping to develop a safe and secure environment for all Kosovars. Battery PAs were chosen to enhance the informational effect of the fires, such as locations between Serbian and Albanian villages. PAs were planned near potential hot spots to deter potential belligerents who could observe the firing of the howitzers.

Public affairs often were used to capture the battery presence mission for not only military channels, but also for publication in open source Falcon publications, such as the "Falcon Flier." These articles highlighted the combat capability of TF Falcon and showed the local populace that the task force was making every effort to ensure peace and stability in Kosovo. Public affairs detachments were sent with both the firing batteries and observers. Their photos and articles proved invaluable in telling the story of the successful application of live fires in peace support operations.

Battery Security. Battery PAs also were deconflicted with known minefields and areas with unexploded ordnance (duds). For potentially hazardous areas, engineers were coordinated to proof the PA, and each PA was verified through the mine action center at TF Falcon headquarters. If an area was to be used for a second or third operation, then it was monitored more closely and mine detectors were used to clear a path into the PA from known KFOR routes. This coordination ensured the security of the battery in its PA.

Additional security concerns were alleviated through constant coordination with TF Falcon G2, maneuver TOCs and civil affairs detachments. Before moving outside the base camp, the battery commander verified the latest information on potential demonstrations along his route or near his planned PA, potential hostile areas or reports of terrorist attacks and the general attitude of the local populace toward KFOR. He also coordinated his occupation with the local quick reaction force (QRF) and maneuver company commander in charge of the sector.

Unique peace support requirements, such as determining market days and other potential traffic congestion along routes, ensured smooth movement. Movement times were often adjusted to avoid known market opening or closing times and other planned demonstrations or local celebrations. This avoided the potential for accidents during the battery's movement and the possibility of unexpected crowds forming around the battery, once it was in position.

Conclusion. On 20 June 2000, 1-6 FA was relieved by 2-3 FA, 1st Armored Division, as part of KFOR 2A. During KFOR 1B's deployment to Kosovo, TF 1-6 conducted 16 Bright Sky Operations in support of TF Falcon and fired more than 1,400 rounds.

Artillery fires met the TF Falcon commander's intent and served a variety of purposes in support of MNB-E. (See Figure 3.) Fires influenced the situation across the operational spectrum. Tactical actions, such as firing illumination, generated operational or strategic intelligence and demonstrated tactical and operational interoperability and US and KFOR resolve.

The superb leadership and training of Redleg NCOs and soldiers and their ability to execute complex, decentralized missions were instrumental in the success of these fires. These same magnificent soldiers also conducted force protection and security operations on two base camps and checkpoint operations and provided medical and other humanitarian assistance missions. However, their primary task remained to provide indirect fires in support of TF Falcon's mission to maintain a peaceful, stable environment for all Kosovars. Mission accomplished—*Swift and Bold.*

Task: Provide 155-mm illumination fires to Multinational Brigade-East (MNB-E) forces throughout the sector.

Purpose:

Bright Sky I *& II*—To demonstrate Task Force Falcon capabilities, resolve and unity following a mine strike in the Russian sector.

Bright Sky III—To deter smugglers from importing illegal weapons that might be used against the Kosovo Force (KFOR) or Kosovar civilians.

Bright Sky IV—To deter smugglers in Task Force 2-2 IN sector and prevent extremist activities that may unhinge the negotiation process.

Bright Sky V, VI, VII, VIII—To facilitate the collection assets abilities to locate hostile forces operating in the MNB-E area of responsibility.

Bright Sky IX and X—To demonstrate Task Force Falcon's resolve and interoperability in support of the 18th Polish Air Assault Battalion and the Greek 501st Mechanized operations.

Bright Sky XI—To dissuade "Mad Mortarmen" operations in coordination with Task Force 2-2 Infantry.

Bright Sky XII—To demonstrate Task Force Falcon's unity and interoperability by firing for the Italian Task Force Gran Sasso.

Bright Sky XIII, XIV and XV—To demonstrate Task Force Falcon's unity and presence by firing for the 18th Polish Air Assault Battalion.

Bright Sky XVI—To demonstrate the capabilities of 2-3 FA, 1st Armored Division, in the transfer of authority.

Fires for R&S—To provide fires in support of Task Force Falcon's reconnaissance and surveillance operations and presence patrols.

Figure 3: Essential FA Tasks (EFATs) for Fires in Kosovo

Lieutenant Colonel (Promotable) Kevin P. Stramara, while in command of the 1st Battalion, 6th Field Artillery (1-6 FA), part of the 1st Infantry Division (Mechanized) headquartered in Germany, served as Commander of TF 1-6, part of Kosovo Force (KFOR) 1B during Operation Joint Guardian. Currently, he is a student at the National War College, Fort McNair, Washington, DC. He previously served as the Deputy Fire Support Coordinator (DFSCOORD) for both the 1st Infantry Division and 3d Infantry Division (Mechanized), the latter at Fort Stewart, Georgia. Also in the 3d Division, he was a Brigade Fire Support Officer (FSO) and Battalion Executive Officer (XO) for 1-41 FA.

Major Michael W. Griffith was the Operations Officer for 1-6 FA and served in KFOR 1B. He now is the 1st Infantry Division Artillery Assistant S3. Previously, he was a Firing Battery Trainer at the National Training Center (NTC), Fort Irwin, California, and Commander of A Battery, 1-41 FA in the 3d Division at Fort Stewart. He also was a Company FSO, Platoon Fire Direction Officer (FDO), Platoon Leader and Task Force FSO in the 5-41 FA, part of the 3d Infantry Division (Mechanized) in Germany.

Major Patrick M. Antonietti was the XO of 1-6 FA during its rotation to Kosovo. He now serves as the Assistant FSCOORD for the 1st Division. He previously had served as a Brigade FSO in 1-6 FA and Company FSO and Platoon Leader in 2-5 FA, then part of the 1st Division (Forward). He was a Battalion FSO and S1 before he commanded B Battery, all in 2-8 FA, part of the 7th Infantry Division (Light), at Fort Ord, California; he also commanded the 7th Division Headquarters and Headquarters Company at Fort Lewis, Washington, before the division's inactivation.

Light Force Modernization
The FA Battalion in the JCF-AWE

By Lieutenant Colonel Vance J. Nannini and Colonel Arthur M. Bartell

In late August 2000, the 3d Battalion, 6th Field Artillery (-) (105-mm towed) with E Battery, 7th Field Artillery (155-mm towed) attached deployed to the Joint Readiness Training Center (JRTC) at Fort Polk, Louisiana, with the 1st Brigade Task Force, 10th Mountain Division to execute the Joint Contingency Force-Advanced Warfighting Experiment (JCF-AWE). The JCF-AWE was a combined Training and Doctrine Command (TRADOC), Forces Command (FORSCOM) and Army Materiel Command (AMC) light force modernization experiment and an integral part of the Army's Transformation campaign plan.

The intent of the experiment was to gain insight into the execution-centric operations that are key to the Army's Transformation. Basically, the experiment applied the insights gained from heavy force experiments during the last several years as well as selected advanced concept technology demonstrations (ACTDs) adapted to light forces to determine if similar improvements in lethality, survivability and force effectiveness could be achieved. Ultimately, the lessons learned from the JCF-AWE will serve as the foundation for light force modernization.

The experiment's basic hypothesis was: "*If* knowledge-based battle command capabilities gained through enhanced digital connectivity and new equipment exist across the doctrine, organization, training, materiel, personnel and leader development (DOTMPL) areas during JCF operations, *then* JCF forces will achieve increases in lethality, survivability and operational tempo."

To this end, during the nine months preceding the experiment, units of the 1st Brigade Task Force (as well as the division assault command post) were fielded with a wide variety of equipment tied to the experimental objec-

The digitized howitzer was a great success story of the JCF-AWE. A/3-6 FA gunners are shown here preparing the digital M119A1 for firing. *All Photos by Specialist William A. Graves*

tives. The main focus of the experiment was on battle command, and the elements of the Army battle command system (ABCS) were key: the maneuver control system (MCS), the all-source analysis system (ASAS), the air missile defense weapons system (AMDWS), the combat service support control system (CSSCS) and the advanced FA tactical data system (AFATDS). Additionally, more than 60 other initiatives addressing all battlefield operating systems (BOS) were fielded in the brigade task force.

This article outlines the JCF-AWE's operations and the performance of several systems relevant to the FA and discusses potential fire support enhancements for the light force in the near future.

FA Battalion Environment. For the direct support (DS) FA battalion, some key systems fielded for the experiment included the laser inertial automatic pointing system (LINAPS) M119 (digitized howitzer), the improved position and azimuth determining system (IPADS), the situational awareness data link (SADL) and Q-36 Firefinder radar to close air support (CAS) quickfire channel, and the naval gunfire interface (NGI). Although not a specific initiative, the Viper target locating system also was tested by the battalion's forward observers (FOs) during this experiment.

Additionally, the battalion's tactical operations center (TOC) was modified to include not only AFATDS (which recently had been fielded in the battalion), but also the MCS and ASAS, their associated light versions (MCS-L and ASAS-L), and a combat information center (CIC). The CIC is a four-flat-panel screen that receives a feed from the ABCS battlefield functional areas and displays this data in the TOC, essentially replacing the TOC's paper maps. Finally, and significantly, the battalion had more than 25 Force XXI battle command brigade and below (FBCB^2) systems.

The experiment's driver was a typical JRTC Cortina scenario with the Cortinian Liberation Front (CLF) and Peoples Democratic Republic of Atlantica (PDRA) Army as the opposing force (OPFOR). The exercise framework included an initial entry mission followed by a counterinsurgency search and attack operation, a defensive mission against an enemy mechanized attack and an attack on a built-up area.

Experiment Operations and Systems. The key benefit of the ABCS equipment was to establish a clear tactical picture common across the task force. Each MCS in each TOC displayed the same tactical picture of friendly forces. This eliminated significant confusion on unit locations and control measures, ensuring all elements of the task force had the same reasonably accurate picture of the friendly situation.

Much of this information was received directly from FBCB^2 systems in near real time. Other information was fed into the system from MCS terminals across the task force. Although there was significant friction early in the experiment, each ASAS eventually displayed the tactical picture of the enemy situation, much as MCS portrayed the friendly situation.

Fused at the CIC in each TOC, each key command and control node shared the same situational awareness, and the task force was able to make well-informed decisions based on this common situational awareness. From a DS artillery battalion standpoint, this ABCS-derived situational awareness showed great potential for more effective planning, coordinating and executing fires in support of maneuver forces. Rapid clearance of fires—generally the most time-consuming process in getting fires into the fight on a nonlinear battlefield—notably were facilitated by this increased situational awareness. We knew not only where friendly forces were, but, just as importantly, also where they weren't.

Clearly, this capability has great potential for increasing our confidence in fighting with fires and minimizing the number of intervention points for fire mission process, ultimately leading to more timely fires with significantly reduced risk of fratricide.

FBCB^2. In terms of situational awareness, the FBCB^2 systems were definitely a "hero of the battle." The FBCB^{2}s used for this experiment were ruggedized laptop computers mounted in vehicles or in static TOCs that provided consistent real-time visualization on a moving map display of similarly equipped systems in the maneuver box. Using the enhanced position location reporting system (EPLRS) as the main communications link, FBCB^{2}s were invaluable in maintaining situational awareness for the battalion. Battery advanced parties, main bodies and resupply convoys were easily tracked from the TOC's (or any other node's) FBCB^2.

The communications functions in the FBCB^2 are as simple to use as a commercial email system. The FBCB^2 facilitates sending and receiving situational reports and other key information without tying up voice communications nets.

On at least two occasions during the experiment, the FBCB^2 feed was used to clear fires significantly quicker than would have been possible without them. There were some range and battery life challenges with the dismounted counterpart of FBCB^2, called the dismounted soldier system or (DSS), but the DSS shows great potential for battle tracking and facilitating getting fires into the fight quickly.

AFATDS. This system already has been fielded across many units in the Army;

our task was to integrate AFATDS with the other ABCS equipment. Although there were some software-based challenges, the battalion's soldiers and outstanding contractor supporters rapidly worked through the overwhelming majority of them. Significantly, of all the ABCS equipment, AFATDS best withstood the hot and humid conditions at Fort Polk.

Digitized Howitzer. In terms of specific initiatives, the digitized howitzer was a great success story of the experiment. Two systems were supplied by the British with A Battery, 3-6 FA, using one throughout the rotation. The LINAPS kit potentially gives light howitzers a Paladin-like capability, eliminating the requirement to lay the gun with an aiming circle or gun laying positioning system (GLPS) or establish an aiming point with aiming posts or a collimator.

The LINAPS kit is mounted on the howitzer and provides on-board positioning, aiming and communications. Firing data is still computed by the battery fire direction center (FDC), but the LINAPS' smart display replaces the M137 sight system.

The smart display shows the computed deflection and quadrant as well as the gun's current tube deflection and quadrant. With this data displayed, the gunner traverses and elevates or depresses his gun tube and lines up one set of cross hairs with another on his data display to lay his gun on the correct data—no leveling of bubbles and cross refinement required.

Significantly, throughout the experiment, gun times on the LINAPS gun were consistently nearly twice as fast as any other gun in the battery. This system shows great promise for improving the responsiveness of fires.

NGI. The naval gunfire interface initiative also shows great promise for enhancing our ability to employ joint fires. One of the biggest historical challenges with employing naval gunfire has been establishing and maintaining communications with the supporting platform. NGI puts these platforms into the tactical internet, and the AFATDS-NGI link resolves these communications challenges and makes naval gunfire available to any observer who has a target within range of a supporting platform.

This capability is especially significant in light of the Navy's continued commitment to perform the naval gunfire mission and the potential development of the DD21 naval surface fire support platform.

SADL. The SADL to Q-36 link to create a CAS quickfire channel was another success with positive implications for employing joint fires. Certain Air Force squadrons have been flying SADL-equipped F-16s for several years. In the experiment, supporting F-16s received the "Blue Feed" (friendly force locations) through the SADL link, significantly enhancing the aircrews' situational awareness and mitigating the fratricide risk.

Q-36-CAS Quickfire. The Q-36-CAS quickfire link was tested successfully during the experiment. This link (which was coupled with the SADL feed) enables a Q-36 radar section to transmit a hostile mortar acquisition directly to supporting CAS aircraft—in effect, permitting rapid counterfire from an aerial platform. With SADL-equipped aircraft available, there is no requirement for a tedious "talk on" to the target, and the Blue Force can engage enemy indirect fire systems faster.

Although the experimental objectives were focused on the Q-36-SADL interface, this same process can be applied to any tactical situation, potentially simplifying the employment of CAS on any battlefield while minimizing the risk of fratricide.

Viper. This target location system deserves special mention. The Viper system hooks a Leica eye-safe laser rangefinder to a PLGR, enabling the operator to determine a very accurate target location in a few seconds (plus or minus 10 meters). Our soldiers found the Viper simple to operate and easy to maintain.

This system shows great promise for filling a critical gap in how we equip our FOs and can significantly increase our confidence in target location. It has the potential to enable first round fire-for-effect missions in most situations as well as reduce the risk of fratricide caused by poor target location.

The Way Ahead. Throughout the experiment, ABCS as a battle command enabler definitely showed great potential for increasing light force lethality, survivability and operational tempo. From a fire support perspective, the ability to more rapidly clear and initiate fires and the targeting advantages gained through the ABCS common situational awareness clearly improve lethality. Similarly, the common situational awareness and integral targeting tools can enhance survivability by more rapidly engaging enemy high-payoff targets (HPTs) before the enemy can affect our operations and is especially effective when initiating proactive counterfire. Finally, the ABCS clearly has the potential for enabling execution-centric warfare, letting us maintain a tempo of operations that would not be possible without the increased situational awareness the ABCS provides.

One clear potential is an FO can rapidly send his fire mission through the

Major Reginald L. Sykes, Executive Officer of 2-22 IN, sends a battle damage (BDA) report over the FBCB².

tactical internet and, based on the increased confidence in friendly locations and the ability to avoid fratricide, his mission will be processed with an absolute minimum of intervention points (if any). We were not "there" yet for this experiment, but we were close.

There are, however, some areas in which we can improve to enhance lethality and survivability even more as well as increase our operational tempo. AFATDS is already integrated into the force and performed well throughout the rotation, but reducing the number of keystroke and menu processing requirements can significantly improve operator speed. We also believe that if a touch screen, voice-recognition capability were built into future AFATDS upgrades, it would speed up operator processing times significantly.

Throughout the experiment, fire missions were generated by voice and only entered the digital network at the first AFATDS node, generally a battalion fire support element (FSE). The battalion worked hard to get the hand-held terminal unit (HTU) into the fight with the FOs and company fire support officers (FSOs). But in the "heat of battle" in a dismounted fight, it proved unrealistic for an FO to punch a fire mission in digitally when it was much quicker to send the mission by voice.

We believe a lightweight voice-recognition system for the FO would significantly enhance the responsiveness of fires across the BOS by getting the fire mission into the system digitally at the origin. This system coupled with the tactical internet already described would significantly increase the probability of FOs getting fires into the close fight quickly without having to relay through multiple stations with the inherent risk of miscommunications and delay.

In terms of situational awareness, the FBCB^2 rapidly could be integrated and used effectively across the force today. By this initiative alone, the Army could enhance the force's lethality, survivability and operational tempo. FBCB^2 also should be fielded to Army aviation elements, providing the commander a good situational awareness over all his force—on the ground or in the air.

The DSS shows great potential and, once the system's battery and range challenges are overcome, could be an integral part of how we visualize the battlefield and get fires quickly into the fight. The system is especially significant for a dismounted force.

Specialist Timothy L. Foxworth, A/3-6 FA, uses the LINAPS kit mounted on the M119A1 howitzer to provide on-board positioning, aiming and communications.

Additionally, a fully functional interface between AFATDS and AMDWS, coupled with Army aviation equipped with FBCB^2 will enhance our ability to manage Army airspace command and control (A^{2}C^2). With the situational awareness provided by FBCB^2-equipped helicopters and the air picture feed from AMDWS, commanders could deconflict surface-to-surface fires and aircraft more rapidly and accurately.

Finally, although not tied directly to ABCS, we must get our FOs a simple, reliable target locating system. The AN/GVS-5 and mini eye-safe laster infrared observation set (MELIOS) were steps in the right direction but are anachronistic with the technology available off-the-shelf today. The ability to accurately, quickly and confidently determine a target's location would exponentially enhance our getting fires into the fight—and, just as importantly, increase the maneuver forces' confidence in indirect fires. Without a simple, lightweight target locating system, discussions about getting fires into the close fight are academic.

Throughout the experiment, the ABCS common tactical picture reduced uncertainty and built confidence within not only the DS FA battalion, but also the brigade task force as a whole. The purpose of being DS is to get effective, timely fires into the fight for the supported brigade. ABCS helps commanders accurately visualize the battlefield and initiate action to fight the combined arms team—and it provides the clear potential for enabling commanders to do that better than ever before.

In this time of Army Transformation, the fire support insights gained through the JCF-AWE demonstrate potential for more effectively planning, coordinating, synchronizing and executing fire support across the spectrum of conflict.

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Colonel Arthur M. Bartell commands the 10th Mountain Division (Light Infantry) Artillery at Fort Drum, New York, and participated in the JCF-AWE at Fort Polk. In his previous assignment, he was the Senior Fire Support Observer/Controller at the Joint Readiness Training Center at Fort Polk. He commanded the 1st Battalion, 7th Field Artillery (reflagged during his command as 3d Battalion, 6th Field Artillery), 10th Mountain Division, participating in Operation Uphold Democracy in Haiti.