Field Artillery

A Professional Bulletin for Redlegs

May-June 2000

Fire Support for the Combined Arms Commander

HQDA PB6-00-3

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INTERVIEW

ARTICLES: Fire Support for the Combined Arms Commander

DEPARTMENTS

Front Cover: Paladins of the 3d Infantry Division (Mechanized) Artillery in convoy at Fort Stewart, Georgia. *(Photo by Don Teft)*

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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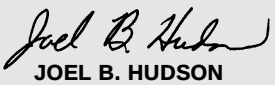

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Fire Support for the Combined Arms Commander

I want to take this opportunity to speak directly to FA commanders and Field Artillerymen who support combined arms commanders. You are the heart and soul of our collective mission. You are the "soldiers on point" for our combined arms commanders, and you're doing an excellent job.

At Fort Sill, we're committed to helping you train better and to providing the tools you need to deliver the most timely and accurate fires. Here are some of the tools we're working on.

Better Simulations. Before your unit goes "down range" on a training event, it should have the opportunity to practice its mission-essential task list (METL) tasks in simulations. As part of our Combat Training Center (CTC) negative trends reversal program, the FA School is working aggressively to address limitations that don't allow your combined arms commander to synchronize his fire support in live, constructive and virtual simulations.

In his interview in this edition, General John W. Hendrix, Commander of Forces Command, expresses his concerns that "…we aren't replicating the devastating effects of artillery rounds at the NTC [National Training Center, Fort Irwin, California] or JRTC [Joint Readiness Training Center, Fort Polk, Louisiana]." This is an Army issue. Indirect fire is not replicated accurately at our dirt CTCs in the simulated area weapons effects-multiple integrated laser engagement system II (SAWE-MILES II) and ground fire markers. The Army's Deputy Chief of Staff for Operations and Plans (DAMO-TR); the Simulations, Training and Instrumentation Command (STRICOM); and the Deputy Chief of Staff for Training of the Training and Doctrine Command (TRADOC) are helping Fort Sill by funding changes to SAWE-MILES II to more accurately replicate indirect fires.

But combined arms commanders must be able to synchronize fires better in all constructive and virtual simulations. Our strategy to do this has three major components: integrate fires training into maneuver simulators—improve the close combat tactical trainer (CCTT) and fully support the Infantry School's effort to develop a dismounted version of the CCTT; accurately replicate fires at the CTCs by modifying SAWE-MILES II; fix the replication of fires in current simulations, such as Janus, corps battle simulation (CBS) and brigade/battalion battle simulation (BBS), and ensure the developmental Warfighter Simulation (WARSIM) 2000 accurately replicates fire support effects.

Improved Doctrine. I delayed the publication of *FM 6-20-40 Tactics, Techniques, and Procedures for Fire Support for Brigade Operations* to incorporate the tenets of the white paper "Fire Support for Brigade and Below" and the lessons learned from the fire support focused CTC rotation scheduled for August. When the FM is published, it will fully support the new version of *FM 71-3 The Armored and Mechanized Infantry Brigade*.

The FA School also is working closely with the Army War College at Carlisle, Pennsylvania, to ensure the revised *FM 100-7 Decisive Force: The Army in Theater Operations* properly outlines fire support doctrine, organizations, responsibilities, structure and inter-agency interface for joint force land component commanders (JFLCCs) and combined force land component commanders (CFLCCs). Our division and corps commanders' fire support elements (FSEs) and deep operations coordination cells (DOCCs) are inadequately resourced to plan and execute fire support for their JFLCCs or CFLCCs. Our work with FM 100-7 will help solve this dilemma.

Accurate Target Location. This is the weakest link in fire support. Time after time, lessons learned from CTC rotations indicate that target location error is the major obstacle to implementing an otherwise effective fire support plan. Current target location platforms in heavy units are unreliable, and target location systems in light units are not light enough.

We'll address this issue in two ways. Beginning with the 3d Infantry Division (Mechanized) Artillery, Fort Stewart, Georgia, in third quarter FY00, we'll field Bradley fire support team vehicles (BFISTs). For light units, we're procuring a limited number of Vipers to offset the lack of a light, viable precision target location device. Viper will be used in the Joint Contingency Force/Advanced Warfighting Experiment (JCF/AWE) at Fort Drum, New York, and the JRTC this spring and summer as well as in the Initial Brigade Combat Team (BCT) JRTC rotation in 2001.

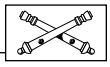
We remain committed to our lightweight laser designator rangefinder (LLDR) under development. But Viper will be one more tool to ensure success and enhance your credibility with combined arms commanders.

Better Institutional Training. We're restructuring the way we train fire support officers (FSOs), NCOs and soldiers on the equipment and procedures they'll use in their units. Today's target location training techniques are essentially the same as they have been for decades: students focus on hilltop observation with a compass, a set of binoculars and a map and then adjust rounds onto the target.

Our officer basic course (OBC) is changing to incorporate all precision targeting platforms into the lieutenants' shoots. Students will learn the importance and necessity of accurate target location as well as become familiar with the equipment they'll use in the field.

I want to change the mindset of our company fire support teams (FISTs) and fire support NCOs. I want them to reject map-spot target location and demand the use of a ground/vehicular laser locator designator (G/VLLD), LLDR, Viper or mini eye-safe laser infrared observation set (MELIOS).

I'm confident that when we add these tools to the FA unit "kit bag," they'll improve your combined arms commander's ability to better synchronize fire support and accomplish his mission. *Field Artillery…King of Battle.*



"Fire Support for Brigade and Below" White Paper

I read "Fire Support Planning for the Brigade and Below" by Major David A. Lee and Colonel John A. Yingling [March-April 1999] with interest as I found that Combat Training Center (CTC) lessons learned are finally beginning to appear in our manuals. I also downloaded the longer "Fire Support Planning for the Brigade and Below" white paper from the Internet and found it did an excellent job of clarifying some points in the article [see the Fire Support and Combined Arms Operations Department (FSCAOD) portion of the FA School on the Fort Sill Home Page: http://sill-www.army.mil].

I have no argument with the thrust of the article or white paper. I do, however, have some observations on portions of the discussion on essential fire support tasks (EFSTs), a part of essential Field Artillery tasks (EFATs) and what products the FSO [fire support officer] should provide as part of a completed order.

EFSTs. Although I'm more familiar with calling these tasks "critical" rather than "essential," the basic components are clear; however, the *Method* portion of the EFSTs requires comment.

Priority. The whole idea of priority of fires [POF] to a maneuver formation continues to amaze me. The Internet paper tries to clarify priority as priority of observer to the HPTs [high-payoff targets] identified instead of priority of fires. The bottom line is if you provide POF to a maneuver unit, it will expect fires to support it and not support the brigade commander's intent.

In the *decide, detect, deliver* and *assess* targeting methodology, we identify the target we want to hit, deploy sensors to find the target and mass our shooters to kill it. Frankly, we should not care if a task force, COLT [combat observation lasing team] or aviation unit finds a target.

The critical thing is to find the right target and kill it at a specific time in a battle. To avoid this priority of fires pitfall, we instead established a "priority of targets" vice "priority of fires" and briefed these targets during the mission brief. That way, all subordinates understood what targets we wanted to hit, when we wanted to hit them and how the attack of those targets supported their operations.

Allocations. In the example given in the article, it simply isn't good enough to tell the battalion FDC [fire direction center] to shoot SEAD [suppression of enemy air defenses] targets. The brigade FSCOORD [fire support coordinator] or FSO must clearly establish the number and type of rounds for each target fired. Using battlefield calculus, the only way the FSCOORD/FSO can determine if he can accomplish each task is if he states the number of rounds required for each mission and adds in the shift time to the next set of targets. Otherwise, he risks "signing up" to more than artillery can execute. It remains the battalion FDC's task to decide which element should fire and where that unit should fire from, but the FSCOORD/FSO must know the number of rounds fired at each target and the shift time to the next target.

Restrictions. There must be another place to put restrictions than as integral to the EFST. Most of the restrictions listed in the article look to be either SOP [standing operating procedures] or those in effect for the duration of a battle—far better to put restrictions in the fire support annex and only mention changes for each EFST when they affect the target. This also helps reduce the size of the EFST, a topic I come back to later.

EFATs. My only comment on EFATs concerns the idea of position areas (PAs). The whole concept of M109A6 howitzers (which don't require communication lines and survey) is to integrate them well forward with maneuver to gain the benefits of range and speed. We don't want them in carefully hoarded PAs away from maneuver. In fact, we want maneuver to become comfortable with artillery intermixed in its formations.

An option we explored was to give movement instructions to a unit. An example might be, "Travel immediately behind lead Bradley platoon and advance no farther west than Grid Line 045. During Phase II, follow the tank company forward to Grid Line 035 and provide supporting fires onto the objective." This technique kept artillery well forward and intermixed with maneuver but out of the way of the ground tactical plan. Ground maneuver commanders accepted this movement concept when it was briefed as part of the mission order and rehearsal and when fires supported maneuver throughout the depth of the battlefield.

Final Orders Product. I don't see the need for a fire support execution matrix (FSEM). If the *Restrictions* portion of *Method* from EFSTs is moved to the fires paragraph and you add executors to targets relative to the time and events of the scheme of maneuver to your scheme of fires, you don't need an FSEM.

We chose, instead, to include this "enhanced" scheme of fires in our orders. We briefed the order with it, rehearsed it at the maneuver and fire support rehearsals and used it to track the execution of the battle. Everyone (maneuver and fires) understood what we were going to do with fires for the entire battle. A last bonus was it cut the size of the fires portion in an order, ensuring we got our orders disseminated to our subordinates in a more timely way.

Final Comments. It became clear reading the complete white paper that both heavy and light forces were addressed. Comments like ensuring company mortars and platoon FOs [forward observers] came to the orders processes are only applicable to light forces. While I admire this attempt to cover light and heavy together—and understand how you actually may give PAs to artillery and POF to the first unit on the ground while seizing a FOB [forward operating base]—I believe it just confuses readers.

The Army has two separate FM 6-30 series fire support manuals: heavy and light. I believe the Army has done that because the fights are very dissimilar. It may be better to have white papers called "Fire Support Planning for the Heavy Brigade and Below" and "Fire Support Planning for the Light Brigade and Below."

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Field Artillery Staff Moves

The *Field Artillery* magazine staff has moved to Building 758 on McNair Road, right across from the east side of Snow Hall, on Fort Sill, Oklahoma. We moved to a one-story stone building just west of where we were before; our building is next door to the Marine Corps Detachment Headquarters building, Browne Hall.

Our telephone numbers (DSN 639-5121/6806 or 580-442-5121/6806) and Fax number (7773 with DSN or commercial prefixes) remain the same—as well as our email address (famag@sill.army.mil) and mailing address (Post Office Box 33311, Fort Sill, Oklahoma 73503-0311).

The US Field Artillery Association offices also recently moved to Building 758. The Association produces the commercial version of *Field Artillery*—called the *FA Journal.*

Field Artillery is produced by the Department of Army for US Army and Marine Field Artillerymen, both Active Component (AC) and Reserve Component (RC), and is distributed free: 13 to every FA battalion and seven per headquarters of a corps artillery, division artillery or separate battery. In addition, chiefs of Army branches, readiness groups, state adjutants general, military libraries, ROTCs and special units or organizations in other branches, services and agencies in the Department of the Defense that work with Field Artillery or fire support doctrine, organizations, training or material are eligible for free copies of *Field Artillery*. If you are eligible and want to start receiving the magazine, email famag@sill.army.mil.

The *FA Journal* is printed by the Field Artillery Association for members: servicemen who wish to receive personal copies at their home addresses, retirees, corporate members, allies and the interested general public. The *FA Journal* is a reprint of *Field Artillery* with color, advertising and Field Artillery Association news items added.

If you are ineligible for a free copy of the magazine and would like to receive the *FA Journal*, contact the Field Artillery Association at usfaa@sirinet.net.

Ed.

Response to "Walk a Mile in My Shoes: AC-RC Team Building"

Lieutenant Colonel John R. Hennigan, Jr., put "steel on target" in his September-October 1999 article about AC-RC [Active Component-Reserve Component] team building. It was refreshing to see the RC portrayed in such a positive light by the AC, along with displaying an appreciation of capabilities as well as our limitations.

A couple of notes, however. If he thinks it's rough operating with only 27 AGR [active Guard/Reserve] instead of the authorized 40 (and he recommends more), try operating with 11 AGR like my FA battalion. As a result, our traditional, part-time soldiers and leaders are strapped with terrific administrative burdens that detract from their limited training time.

The "unit vacancy promotion" system he doesn't like is used as our state's method of promoting the best officers "below the zone." ARNG [Army National Guard] officers do not face the same DA [Department of the Army] board system as AC officers do; we only are boarded once we approach maximum time-in-grade. Our officers have no other way to be promoted early for excellence. At least in my state, the unit vacancy promotion requirements are very difficult to achieve, so only the best are promoted under this program.

I graduated from Valley Forge Military Junior College and went to FAOBC [Field Artillery Officer's Basic Course, Fort Sill, Oklahoma] before completing my BA degree. Additionally, we often send OCS [officer candidate school] graduates who have yet to complete their degrees to OBC, so this is not an MOSQ [military occupational specialty-qualified]/deployability problem as Lieutenant Colonel Hennigan suggests. Of course, rules are different from state to state in the ARNG, so perhaps Louisiana has different rules than Pennsylvania.

On a final note, kudos to the magazine for publishing an edition dedicated to RC Redlegs.

CPT Anthony M. Smith, FA
1-109 FA, PAARNG

Climbing to Glory. Specialist Farlan Bingham, 2d Battalion, 15th Field Artillery, receives a coin from Brigadier General Gary D. Speer, Assistant Division Commander for Operations, 10th Mountain Division (Light Infantry) at Fort Drum, New York. Specialist Bingham received the coin in a ceremony on 26 January as one of the division's Heroes of the Month for his level of excellence and responsibility. He works in a staff sergeant position and performs preventive maintenance, checks and services and is accountable for all the nuclear, biological and chemical equipment in the battalion. *(Photo by SFC William Graves)*

General John W. Hendrix
Commanding General of Forces Command with Headquarters at Fort McPherson, Georgia

Transforming the Army to Meet the 21st Century Threat

Interview by Patrecia Slayden Hollis, Editor

Q *As the Commanding General of V Corps and the US Task Force Hawk, part of NATO's Operation Allied Force, what was your initial mission and how did it change en route to Kosovo?*

A Task Force Hawk was a unique organization specifically configured to conduct Apache deep strikes against the Army of Yugoslavia that was destroying the population and property of the small province of Kosovo. Initially, we were to deploy to Macedonia and attack into Kosovo. But the mission changed substantially when we were en route—Macedonia wouldn't give us permission to conduct operations from there, so we went into Albania.

There are dramatic differences between Macedonia and Albania. Macedonia was secure and had good airfields, an established military logistical support base and a border into Serbia that was out-posted with observers. In Albania, we had none of these and very severe terrain. We had 9,000-foot mountains that created a narrow, predictable corridor through which we'd have to attack from the Albanian border.

The threat to our forces in Albania was significantly greater. Large portions of Albania are affected by large, well organized criminal elements that are well armed—they have hundreds of thousands of former Soviet automatic weapons and artillery pieces. The Army of Yugoslavia routinely crossed the Albanian border to attack the KLA [Kosovo Liberation Army] that based a lot of its operations in the northeastern part of Albania along the Kosovo border. Our forces were a 10-minute flight away from 60 or so Army of Yugoslavia aircraft and vulnerable to Yugoslavian ground force attacks out of Montenegro along our north and northwestern borders. So, en route, we restructured the force and added a Bradley battalion and other assets for ground security and more artillery [see Figure 1].

The artillery part of the task force is interesting. We took a combination of 105-mm howitzers, Paladins and MLRS [multiple-launch rocket systems] that were ATACMS [Army tactical missile system]-capable. We needed to fire SEAD [suppression of enemy air defenses] for the Apaches from various weapon systems, with the option of air assaulting the 105s closer to the Kosovo border to increase our range.

We had plans to synchronize all our artillery plus other deep attack assets, such as Army aviation, Air Force air and naval fires, both missile and high performance aircraft—plus NATO assets. This was a very complex operation, and our fire supporters were well prepared and performed superbly.

Q *In Task Force Hawk, what lessons did we learn about targeting and deep operations for joint and combined small-scale contingency operations?*

A We learned, or relearned, a number of important lessons. We learned the first lesson very quickly: we can't always do in an actual operation what we do in a lot of our Warfighter exercises. In most of our BCTP [Battle Command Training Program] Warfighters, we attack multiple times in one night with the same formation. For example, we have one Apache battalion make two deep attacks in the same night and do that repetitively for nights on end.

The fact is, we can't do that. We don't have the helicopter crews, other personnel or time to plan the attack routes and conduct all the required coordination. We have to take a more realistic approach in our exercises.

Now, in the BCTP's defense, the Warfighter we conducted just before we deployed did more to prepare TF Hawk for overall operations than any single training piece. It was excellent training.

Lesson Number Two is that synchronization among the Air Force, Army and Navy at the procedural level is more difficult than in our peacetime training exercises. We need a fuller, more realistic integration of the procedures from each of the services into our training exercises to prepare us for joint contingencies. And every time we conduct deep operations, they're going to be joint.

It was interesting that we had no problems with some things people thought we would—for example we put our attacks on the Air Force ATO [air tasking order]. We had been doing that in V Corps in our training exercises for more than a year. When the attacks are on the ATO, they are resourced with air assets for JSEAD [joint SEAD] and get complete air caps, when needed, and access to more commo—assets not organic to the Army.

Another very important lesson we learned is that the DOCC [deep operations coordination cell] is a complex, robust organization that's difficult to man out-of-hide but critical to our operations. It's not on any corps or division MTOE [modified table of organization and equipment].

The DOCC integrates deep operations into the larger operations planned at the division, corps or CINC [commander-in-chief] levels and involves joint resources, at a minimum, and often allied resources. It's a unique organization of fire support element, aviation, G2 and G3 personnel who must plan and coordinate critical operations, say, to send helicopters deep across enemy lines after high-payoff targets.

The DOCC calls for more assets than we can take from a division and stretches a corps. The bottom line is that it's time to put the DOCC on the MTOE and train with it in combined arms and joint exercises.

Q *In Albania, you had three chains of command (see Figure 2). What kinds of challenges did you face with three chains of command?*

A We faced the same challenges others have faced in military operations in the past and will face in the future. If you read about command and control issues as far back as World War I and, especially, World War II, we had coalition chains of commands and US chains of command. Such a structure always carries a fair number of challenges.

I had very clear operational bosses in the US chain of command and many of my bosses wore two hats. The Commander of Joint Task Force Noble Anvil was Admiral Jim Ellis who wore his US hat of CINCNAV [Commander-in-Chief of the US Navy in Europe] and his NATO hat of CINCSOUTH [Commander-in-Chief, South]. General Wes Clark was the US CINCEUR [Commander-in-Chief of US Forces in Europe] and NATO's SACEUR [Supreme Allied Commander in Europe]. We kept our chains separate and distinct. Fortunately, because the US brings a lot to the fight, US officers are often dual-hatted.

- Task Force Command Group (V Corps Headquarters-Minus)
- V Corps Artillery Headquarters-Minus
- 41st Field Artillery Brigade Headquarters
- 1st Battalion, 27th Field Artillery (Multiple-Launch Rocket System)-Plus
- 12th Aviation Brigade-Minus
- 11th Attack Helicopter Regiment (Two Squadrons of Apaches)
- 2d BCT, 1st Armored Division-Minus (Force Protection)
  - 1st Battalion, 6th Infantry (Mechanized) Augmented with A/4-27 FA Paladin and FA Target Acquisition Section
  - 2d Battalion, 505th Parachute Infantry Regiment Augmented C/1-319 FA M119
- 7th Corps Support Group-Minus
- 32d Signal Battalion-Minus
- Military Police Detachment
- Psychological Operations Detachment
- Special Operations Command and Control Element

Figure 1: Task Force Hawk Task Organization

Initially, we had some difficulty figuring out who controlled what portions of the air space because no land component commander was designated for the operation. But our real challenges were not so much chain of command or command and control but determining the *right* thing to do. Who should approve targets—the CINC, JTF commander or air component commander? We had a lot of US and NATO political constraints to work through. Overall, I think our command and control worked very well.

Q *What are the contingency options the Initial/Interim BCT [brigade combat team] brings to the CINCs? What are the challenges to achieving these capabilities?*

A The BCT brings the CINCs significantly increased strategic responsiveness and flexibility. This means a CINC can have a lethal, survivable and mobile task force of brigade size on the ground very quickly—96 hours, anywhere in the world. That's an incredible capability.

The overall goal for the future is to increase the deployability of the entire Army with a division on the ground anywhere in the world in 120 hours and five divisions in 30 days.

The problem is today we have the world's best Army for what it was created to do. But the threat we were designed to overwhelm doesn't exist—we won the Cold War. We developed an Army that could fight the former Soviet Union, the Warsaw Pact, on the plains of Europe and win.

Instead, we now face a variety of regionally based instabilities throughout the world, involving lingering, often increased, ethnic conflicts. These small-scale contingencies call for a credible force to get there quickly—hopefully, to deter the crisis from becoming war. We need lighter, more mobile vehicles that are more rapidly deployable, even on our lightest aircraft.

Tactical/Operational (US)	Title X (US)	Tactical/Operational (NATO)**
Joint Chiefs of Staff	Headquarters, Department of the Army	Supreme Allied Commander, Europe
Commander-in-Chief, US Army Europe	Seventh Army	Allied Forces South
Joint Task Force Noble Anvil*	V Corps	Albanian Forces (NATO)
Task Force Hawk	Task Force Hawk	Task Force Hawk

*Commanded by a three-star admiral; included an air component commander (ACC) but no land component commander (LCC).
**On order chain of command anticipated but not activated.

Figure 2: Task Force Hawk Chains of Command

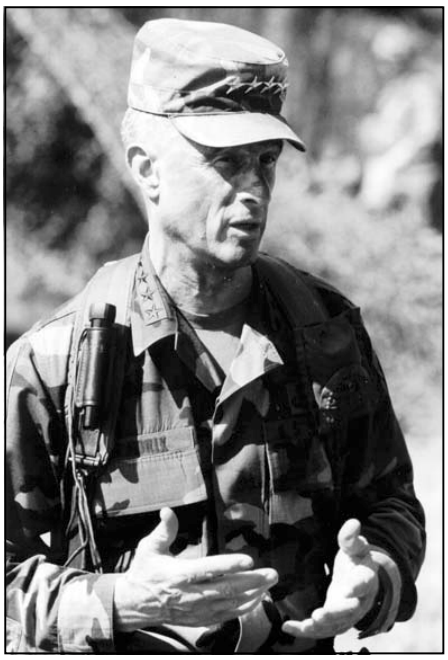
But if war already has broken out, then we need to bring in a larger, more lethal and tactically capable warfighting force and do that fast and well. There is no intent in the transformation to divest the Army of its capability to fight a high-intensity conflict. But this future force cannot require the mountains of logistical support that our present force requires.

The old concept of the force was "Give me your best punch and I'll take it and then punch you out." The future force concept must be "You can't hit me, but I can hit you and stop you in your tracks." The concept of the future force is fundamentally different.

One challenge is to convince our Congressional leaders that the concept warrants funding. We can't transform the force and change combat vehicles to make the Army more deployable without additional funding.

A second challenge is to work with the industrial community to refine and incorporate the new technologies we need for our objective force. Some of the technologies are already out there, and others will take more time. We also have some design and developmental work to do. We need a variety of complementary weapons and digital communications and situational awareness systems.

Q *The Army has established the requirement for the Interim BCT to have an IAV [intermediate armored vehicle]-based 155-mm self-propelled howitzer in FY03 to FY10. How important is it for the FA in the Interim BCT to have the same tactical mobility as the supported force?*



GEN Hendrix mentors at the JRTC.

A Absolutely critical. The tactics clearly demand artillery with equal or even superior mobility to its supported force. It will require eight to 10 years to bring all of the Interim BCT combat pieces together with a common chassis that will reduce our logistical consumption (common maintenance procedures, parts, fuel, etc.). We can't delay the start of the objective artillery system so it isn't ready with the rest of the force.

Now, in the short-term, we have to use what's immediately available—admittedly very different from the objective force. For the Initial BCT, we'll use state-of-the-art, off-the-shelf IAVs slightly modified to meet our requirements. The artillery for the Initial BCT will be M198s. The Initial BCT will have three maneuver battalions, a reconnaissance battalion and an artillery battalion.

Executing the first Initial BCT will take about another year and one-half—it will go to the JRTC [Joint Readiness Training Center, Fort Polk, Louisiana] for its first CTC [Combat Training Center] rotation in December 2001. Fundamentally, the BCT will give us more soldiers on the ground and have lighter, more tactically mobile combat vehicles—they could be tracked or wheeled.

Q *What is your philosophy for training live-fire combined arms operations?*

A Live fire is essential—from the individual soldier firing his weapon up to the highest level of collective units we can afford to live fire. Generally, a soldier will master dry-fire techniques very quickly, whether using his M16 rifle, a tank or howitzer. But, when he live fires, there's another level of learning that takes place that he really can't get anywhere else. He needs to know firsthand the effects of his weapon and have confidence in it and other systems on the battlefield. And that's especially important when it comes to artillery.

I'm concerned that we aren't replicating the devastating effects of artillery rounds at the NTC [National Training Center, Fort Irwin, California] or JRTC. We have lasers that replicate our tanks and anti-tank systems and our small arms fire. But with artillery, we haven't found a good way to replicate its fire.

Until soldiers and leaders see a battalion fire for effect, they don't understand the impact of artillery on the battlefield. And once they've seen it, they'll never forget it. But until they do, they aren't as focused as they need to be on bringing artillery into their close fight.

Combined arms live-fire exercises make us pull it all together—they train the "nuts and bolts" of our business. One caution is that ammunition costs a lot of money, so commanders up and down the chain must ensure they use all rounds effectively to get the most out of our training.

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

A Be very proud. You are part of the greatest military force the world has ever known. The US military provides security, stability and *hope* for people around world. Daily, you are entrusted with the sons and daughters of America and must accomplish critical missions around the globe—awesome responsibilities.

And after watching from the inside for more than 30 years, I can tell you, you are up to the challenge.

General John W. Hendrix assumed command of Forces Command, with its headquarters at Fort McPherson, Georgia, on 23 November 1999. In his previous assignment, he was the Commanding General of V Corps in Germany where he commanded the US Task Force Hawk, part of NATO's Operation Allied Force that stopped the ethnic conflict in Kosovo. He also commanded the 3d Infantry Division (Mechanized) at Fort Stewart, Georgia, and the Infantry Center and Fort Benning in Georgia. General Hendrix was Deputy Chief of Staff for Operations of the US Army in Europe, Assistant Division Commander of the 1st Armored Division during Operation Desert Storm and Executive Officer to NATO's Supreme Allied Commander in Europe/US Commander-in-Chief of Europe.

STOP SELLING WOLF-TICKETS

2d BCT, 4th ID, Terrain Map

An Objective Way of Accomplishing **EFATs**

by Lieutenant Colonel Eric L. Ashworth

Have you ever sat in a Field Artillery support plan briefing and asked yourself, "Can this unit handle all these EFATs [essential FA tasks]?" Remember, as artillerymen, if we say we can accomplish a mission, there's a Grunt out there who will put his life on the line, believing we will meet our objectives. To help our fellow soldiers, we must be realistic in portraying what we can and can't do before the first bullet is ever fired. Easier said than done, right?

One method to determine if we can accomplish our EFATs was used by 6th Battalion, 27th Field Artillery (6-27 FA) multiple-launch rocket system (MLRS) during our National Training Center (NTC) rotation at Fort Irwin, California. The method didn't work perfectly in every battle; however, one thing it did was help us and the direct support (DS) unit we were reinforcing (3-16 FA) in the decision-making process by determining which FA unit could meet each task given to the force FA headquarters.

This article discusses the four steps in the determination process, focusing on Class V issues as a primary example. However, the process easily works (and should be worked) for all classes of supply. To simplify the example, an MLRS unit is used due to the limited number of ammunition types capable of being fired by the MLRS battalion, although the method will work for any artillery battalion.

6-27 FA had a general support reinforcing (GSR) mission to support 3-16 FA. A Battery, 6-27 FA, had been detached to fire Army tactical missile system (ATACM) missions for X Corps, leaving 6-27 FA in control of two batteries (18 launchers). Our mission was to fire an eight-target suppression of enemy air defenses (SEAD) plan in support of a division deep attack and provide counterfire to destroy the 52d Division Artillery Group (52d DAG). All other launchers could be used in reinforcing the fires of 3-16 FA.

Initially, the plan was for the maneuver brigade combat team—2d BCT, 4th Infantry Division (Mechanized)—to attack a motorized rifle company (MRC) while 6-27 FA defeated the other two MRCs in the enemy covering force. 2d BCT also asked the artillery to keep the 46th Regimental Artillery Group (46th RAG) from influencing the maneuver force. Finally, 3-16 FA asked 6-27 FA to mass along the point of penetration (POP). 3-16 FA had the missions to provide DS fires for the BCT, fire all smoke missions and provide SEAD for an air insertion.

When the brigade commander first gave us our missions, we wanted to say, "Yes, Sir, we've got you *covered*." Here was a maneuver commander who really was using his artillery. But could we realistically meet all these EFATs?

We used four steps to answer that question: analyze your assigned tasks, know the enemy, know your capabilities and do the math. Once completed, these steps quickly told us realistically if we could accomplish the EFATs and which ones we needed to revise.

Step 1: Analyze Your Tasks. I once worked for a maneuver commander who told me his artillery support had only two tasks: keep the enemy from impeding his maneuver plan during offensive operations and disrupt the enemy scheme of maneuver so the enemy couldn't mass on his attack objective during defensive operations. Although this guidance leaves room for interpretation on how to get the tasks done, I was surprised he never stressed that artillery needed to *kill* stuff.

Often, we artillerymen get focused on how much we are killing without really analyzing whether our fires are achieving the desired endstate. Is the current rate of fire ensuring we have the capabilities to mass when needed? To keep the enemy from supporting the POP, can we afford to place suppressive fires on the enemy and, thus, conserve ammunition? It's important to ask about and understand the specific tasks before determining options to get the job done.

Another chance for misunderstanding the EFATs is in the military definitions in operations orders (OPORDs). Does everyone have the same understanding of these definitions? Does the word "destroy" mean the same to an artilleryman as it does to an armor battalion commander? What exactly constitutes "destroying" an enemy unit?

OPORDs are filled with terms like "defeat," "suppress" and "secure the objective." These are great terms for a commander or staff to forward guidance. However, to determine the details of how to accomplish the required tasks, maneuver and fire support must discuss exactly what they mean and what's expected for each task.

The first task we had a question on was the 4th Division Artillery's (Div Arty's) request for 6-27 FA to "destroy the 52d DAG." After asking the Div Arty S3 to be more specific, he said he wanted two of every three batteries in every enemy artillery battalion in the 52d DAG to be incapable of firing. Although forcing the DAG to move would make it difficult to fire effectively, he requested specifically for casualties to degrade the DAG's command and control. Casualties of this amount should make command and control almost non-existent. With these specifics, we established the EFAT would be to provide counterfire to destroy 67 percent of all tubes and launchers within the DAG.

The next question we had was about the 2d BCT's request to defeat two MRCs. Further guidance explained that 50 percent armored vehicle causalities within both of these MRCs would degrade MRCs' ability to support the defense of the enemy's third MRC. Overall, the goal was to keep these forces from displacing during the battle to support the MRC in contact.

The brigade would insert combat observation lasing teams (COLTs) to report accurate grid locations to targets. Suppression or obscuring these targets was considered an option if ammunition was tight. Therefore, the EFAT was to defeat two MRCs of the 46th Motorized Rifle Regiment (MRR) by destroying 50 percent of the armored vehicles in each MRC.

We continued this process to cover all our questions. 3-16 FA had tasked 6-27 FA to provide counterfires to destroy 67 percent or more of the tubes of the 46th RAG and the request to "mass" at POP was better defined as having the capability to fire three 12-rocket missions at targets of opportunity.

Could we meet all these requirements? At this point, we didn't know, but at least we understood our assigned tasks.

Step 2: Know the Enemy. The next step is to visit your S2. The bottom line is you've got to know what's in each enemy unit before you can determine what you need to destroy in it. Understanding the commander's intent and knowing the enemy's disposition tied to each of the maneuver commander's tasks led the 6-27 FA staff to the information outlined in Figure 1.

Step 3: Know Your Capabilities. This step is nothing more than assessing your unit's capabilities against each EFAT. 6-27 FA uses a chart we received from the NTC (Figure 2) to help calculate the amount of ammunition required to destroy specific weapon types. The figure shows the casualty assessments expected per target type based on the number of M26 MLRS rockets fired (listed across the top). A similar chart can be produced for other artillery systems or, at a minimum, you can use the attack guidance matrix (AGM) published in the OPORD.

Next, you determine what the size of the target is you are shooting at. This helps determine how much ammunition you should expend on each fire mission.

Because two of our EFATs focused on destroying enemy artillery systems and we knew the enemy fought with artillery battery formations, we quickly determined that 12-rocket (two-pod) fires per battery target would take out five of the enemy's six artillery pieces (see Figure 2). This was greater than the 67 percent destruction required. Therefore, for the destruction of the 46th RAG and 52d DAG, we determined that one hit of an enemy artillery battery with 12 MLRS rockets essentially would cause that battery to be combat ineffective.

For the SEAD targets, the Div Arty provided an eight-target fire plan and specified six rockets per target.

In the case of the MRC targets, the maximum number of systems we reasonably could expect to destroy per fire mission was one (given that the vehicles in the MRC likely would be dispersed or, possibly, moving). We also could not be sure the observers would be positioned to determine the target type in the MRC (and, therefore, the number of rockets required for the kill), so we decided to fire six rockets per target—the number required for a tank kill. This assured we'd use sufficient ordnance to destroy any target in the MRC.

How sure are you that each fire mission will hit the target? Answering this question determines the "accuracy factor" or the number of times you must shoot the required rockets at a given target before you are confident you killed it. In counterfire operations, this equals how rapidly you can conduct your counterfire battle drill as compared to how fast the enemy artillery systems can displace.

We believed we were trained to the standard that we would always hit the 2S1 and 2S5 battalions within their seven-minute displacement time. Therefore, for these weapon systems, our accuracy factor was 1.0 or one fire mission with one battery killed. For the 2S19 battalions, we subjectively determined that we could hit these units 33

EFAT #1: Fire SEAD to destroy eight light-skinned air defense targets along the division air attack route.

EFAT #2: Provide counterfire to prevent the DAG from affecting the friendly breaching site. The required effects are to destroy 67 percent of all tubes within the DAG. The 52d DAG consisted of 18 2S5 guns with an expected displacement time of seven minutes, 18 BM-21 MRLs with an expected displacement time of two minutes and 18 2S19 guns with an expected displacement time of three minutes.

EFAT #3: Defeat two MRCs of the 46th MRR to prevent them from supporting the third MRC. Effects required are the destruction of 50 percent of the armored vehicles in each MRC. Each MRC was estimated to have three T-80 tanks and 10 BMPs.

EFAT #4: Provide counterfire to prevent effective fires from the RAG on friendly forces. Effects required are to destroy 67 percent of all tubes within the RAG. The 46th RAG consisted of 18 2S1 guns with an expected displacement time of seven minutes and 36 2S19 guns with an expected displacement time of three minutes.

EFAT #5: Mass along the breaching site to support the battalion task force's seizing of the maneuver objective. 3-16 FA requested 36 rockets (six pods) available for targets of opportunity along the axis of attack.

Legend:

BMPs = Soviet-Made Tracked Infantry Combat Vehicles
DAG = Division Artillery Group
MRCs = Motorized Rifle Companies
MRLs = Multiple-Rocket Launchers
MRR = Motorized Rifle Regiment
RAG = Regimental Artillery Group
SEAD = Suppression of Enemy Air Defenses

Figure 1: Sample Essential Field Artillery Tasks (EFATs)

percent of the time—an accuracy factor of 3.0 on the average. This meant we had to shoot the target three different times before we could be confident we destroyed it.

We believed we could beat the two-minute BM-21 displacement time 25 percent of the time (accuracy factor of 4.0). So we had to fire on each BM-21 target four times to be confident we destroyed it.

For all other targets, observers could determine the location of the target and guarantee the targets would be stationary. We gave these targets an accuracy factor of 1.0.

Later, T-80 tank targets were adjusted to an accuracy factor of 2.0 due to the fact they were dug in. The matrix in Figure 2 shows a tank target in the open requires a minimum of six rockets to destroy. We conservatively decided we might have to fire six rockets on the dug-in tank twice before it became inoperative.

Some may claim this step is too subjective. However, each unit is unique and needs this subjectivity to factor in its training status. The goal is to determine what missions your unit can handle and what missions should be reassigned to other weapons systems—before the battle.

Rockets			1	2	3	4	5	6	7	8	9	10	11	12
Troops in Open	Platoon		4	8	9	11	12	13	13	14	15	15	16	16
	Company		12	24	27	33	36	44	45	46	47	48	49	50
Troops Dug-In	No O/H	Platoon	2	3	3	3	4	4	4	5	5	5	6	6
		Company	6	8	9	10	11	12	13	14	15	16	17	18
	With O/H	Platoon	1	2	2	2	2	2	3	3	3	3	4	4
		Company	2	3	3	3	4	4	4	5	5	5	6	6
Artillery			X	X	1	1	2	2	3	3	4	4	5	5
Armored Personnel Carriers			X	X	1	1	2	2	3	3	4	4	5	5
Tanks			X	X	X	X	X	1	1	1	1	1	2	2

Legend: **No O/H =** No Overhead Cover **With O/H =** With Overhead Cover

Figure 2: Expected Kills by Target Type. Across the top of the matrix are the number of M26 rockets fired. Down the left side are the target types. The numbers in the matrix are the casualties expected per rockets fired, based on the target types.

Step 4: Do the Math. Finally, you need to calculate what ammunition is available. During this battle, 6-27 FA was under a "Do not exceed 50 percent of the UBL [unit basic load]" restriction. Therefore, of the 228 MLRS pods in our two batteries available to fire the EFATs, we could fire only 114 of them. This was a critical degradation in killing power and key in determining our abilities to meet our EFATs.

The expected ammunition expenditure of all the EFATs given to 6-27 FA during this battle is shown in Figure 3. The figure shows the amount of ammunition needed for each EFAT, based on

EFAT	Required Kills	Pods Required	Accuracy Factor	Total Ammo Required
1. Shoot SEAD	8 (8 Different Targets)	1	1.0	8 Pods
2. Destroy 67% of DAG:				
(12) 2S5 Guns	3 (5/6 per Battery Hit)	2	1.0	6 Pods
(12) BM-21s	3 (5/6 per Battery Hit)	2	4.0	24 Pods
(12) 2S19s	3 (5/6 per Battery Hit)	2	3.0	18 Pods
3a. Defeat First MRCs (50%):				
(2 of 3) T-80s	2 (2 Different Targets)	1	2.0	4 Pods
(5 of 10) BMPs	5 (5 Different Targets)	1	1.0	5 Pods
3b. Defeat Second MRCs (50%):				
(2 of 3) T-80s	2 (2 Different Targets)	1	2.0	4 Pods
(5 of 10) BMPs	5 (5 Different Targets)	1	1.0	5 Pods
4. Destroy 67% of the RAG:				
3 Batteries of 2S1s	3 (5/6 per Battery Hit)	2	1.0	6 Pods
6 Batteries of 2S19s	6 (5/6 per Battery Hit)	2	3.0	36 Pods
5. Mass at Penetration:				6 Pods
Total Pods Required:				122 Pods
Total Ammunition Available:				
(2) M270 Batteries x 114 Pods (UBL) x 50% (Ammunition Restriction) =				114 Pods
Ammunition Shortage:				8 Pods
Ammunition for Targets of Opportunity:				None

Legend:
BMPs = Soviet-Made Tracked Infantry Combat Vehicles
DAG = Division Artillery Group
MRCs = Motorized Rifle Companies
RAG = Regimental Artillery Group
SEAD = Suppression of Enemy Air Defense
UBL = Unit Basic Load

Figure 3: Initial Ammunition (Unit Basic Load) versus Ammunition Required to Accomplish the EFATs

EFAT	Required Kills	Pods Required	Accuracy Factor	Total Ammo Required
1. Shoot SEAD	8 (8 Different Targets)	0.5	1.0	4 Pods
2. Destroy 67% of DAG:				
(12) 2S5 Guns	3 (5/6 per Battery Hit)	2	1.0	6 Pods
(12) BM-21s	3 (5/6 per Battery Hit)	2	4.0	24 Pods
(12) 2S19s	3 (5/6 per Battery Hit)	2	3.0	18 Pods
3. Defeat One MRC (50%):				
(2 of 3) T-80s	2 (2 Different Targets)	1	2.0	4 Pods
(5 of 10) BMPs	5 (5 Different Targets)	1	1.0	5 Pods
4. Destroy 67% of the RAG:				
3 Batteries of 2S1s	3 (5/6 per Battery Hit)	2	1.0	6 Pods
6 Batteries of 2S19s	6 (5/6 per Battery Hit)	2	3.0	36 Pods
5. Mass at Penetration:				6 Pods
Total Pods Required:				109 Pods
Total Ammunition Available:				
(2) M270 Batteries x 114 Pods (UBL) x 50% (Ammunition Restriction) =				114 Pods
Additional Ammunition Available for Targets of Opportunity:				5 Pods

Figure 4: Final Ammunition Expenditure Plan to Accomplish the EFATs

the number of targets to hit and the amount of ammunition planned for each target, factoring in the effectiveness rating. By subtracting the required amount from the ammunition available, you determine the shortfall or excess available. In our case, we didn't have enough ammunition to cover all our EFATs.

Here is where we earn our paychecks. We had to come up with at least eight pods of ammunition. First, we asked Div Arty to reduce the restriction on ammunition. Div Arty quickly denied our request.

Next, we reduced the fire for each SEAD target from six to three rockets (0.5 pods). These targets were less protected than the "APC" target category shown in Figure 2. Thus, the reduction still adequately met the requirements for killing each target. We presented this logic to the Div Arty, which approved the reduction. This saved four pods of ammunition (eight SEAD targets).

Finally, the maneuver commander removed one of the MRCs from 6-27 FA's EFATs and had helicopters destroy the company. This saved nine pods, giving us the confidence that we'd have the ammunition required to accomplish the EFATs plus a few additional pods for targets of opportunity. Figure 4 shows our final ammunition plan.

After completing the four steps, the FA tactical operations center (TOC) has several decisions to make before the battle begins: Which battery shoots each EFAT—are units positioned properly? Does the ammunition need to be downloaded? Who's tracking the ammunition to specific tasks? Do force protection issues need to be solved before targets are fired? When are the fire plans going to arrive and be rehearsed?

However, finalizing the EFATs plan before determining if resources are available to execute the plan may doom at least one of your critical tasks to failure. You gain the flexibility to adjust for unplanned situations during battle when you understand your tasks, your capabilities and limitations and how resources are allocated before the battle starts. Without this attention to detail, you enter the battle guessing if you can accomplish your objectives rather than confident you can execute your EFATs.

Redlegs work in the 6-27 FA (MLRS) battalion TOC at the NTC (1998).

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Brigade Staff During Wargaming

A Day in the Life of a Brigade FSO at the NTC

by Lieutenant Colonel Frank J. Siltman
and Captain Keith A. Casey

The brigade fire support officer (FSO) looked with bleary eyes at the division planners issuing the division order to the brigade staff. It was 1300. He had been up since 0300, and the brigade combat team (BCT) had fought a defense-in-sector in the vicinity of Whale Gap all morning. The BCT had just issued a new order for a movement-to-contact to the task forces; the planners at the National Training Center (NTC), Fort Irwin, California, were giving the BCT staff an order for a security zone attack.

After receiving the order, the BCT staff members get into their high-mobility multipurpose-wheeled vehicles (HMMWVs) to find the tactical operations center (TOC). The TOC is moving 20 kilometers to Hill 720 for the BCT to initiate the movement-to-contact through the central corridor. The staff arrives ahead of the TOC, but the S3 had sent the plans section forward with the quartering party, and the section is set up for the staff to begin the military decision-making process (MDMP). It's 1430.

Mission Analysis Briefing/Issue WARNO. The S3 allots an hour for the mission analysis and schedules a mission analysis briefing to the BCT commander at 1600. The brigade FSO understands from the white paper "Fire Support Planning for the Brigade and Below" (16 September 1998) that fire support planning must be effective, integrated and executable, and he understands the division's maneuver and fire support plan.

The brigade FSO and the targeting officer dissect the information in the order. They conduct a time analysis, organize facts and assumptions, identify the specified and implied tasks, translate assets into capabilities and, finally, conduct an analysis of the effects of the intelligence preparation of the battlefield (IPB) on fire support. The FSO briefs the mission analysis, covering the topics in Figure 1 on Page 12.

The BCT commander then issues his intent and guidance for fires, including the information listed in Figure 1. The brigade commander also issues guidance for the combat observation lasing team (COLT) platoon leader and reconnaissance and surveillance (R&S) preparations.

Armed with the initial guidance, the brigade FSO issues a fire support warning order (WARNO) to the subordinate units, including the direct support (DS) and reinforcing battalion S3s. The WARNO communicates the outputs from the mission analysis with the approved essential fire support tasks (EFSTs) and the fire support timeline, at a minimum. This allows the FSO's subordinate units to conduct concurrent planning to support the plan.

COA Development. At 1900, the staff begins the course of action (COA) development. The process is short, as the commander already has outlined two detailed concepts in his intent.

The FSO and the targeting officer begin the COA development to determine the "how" of fires execution from the "what" of mission analysis. They begin planning the method of how to accomplish the EFSTs—determining where to find and attack the enemy formations, identifying the high-payoff targets (HPTs) in those formations and quantifying the effects required.

The FSO and the targeting officer in concert with the brigade staff begin planning a method for each EFST. They allocate assets to detect and attack each formation to achieve the desired effects. The entire staff works together to integrate the fire support events or actions into a maneuver plan.

At the completion of the COA development, the assistant brigade FSO conducts feasibility testing using battle calculus and doctrine to validate the plan. The outputs from the COA development are listed in Figure 1. The FSO issues a WARNO 2 that covers the outputs of the COA development.

Wargame. The brigade executive officer (XO) scheduled the wargame to start at 2100. The FSO, assistant FSO and targeting officer are prepared with initial position areas for artillery (PAAs) and the outputs of COA development. The wargame helps the FSO finalize the plan through to the targeting decisions, visualize and synchronize the plan with maneuver, test and refine the plan and finally modify it, as necessary. (See Figure 2 on Page 13.)

After the wargame ends at 0200, the fire support NCO (FSNCO) conducts a quality control check of the wargame outputs. This ensures the annex has the wargame products listed in Figure 1. Figure 3 on Page 14 shows an example of the brigade scheme of fires product based on the scheme of fires visualized in Figure 2. After the brigade XO approves the annex, it's included in the orders production set for 0600.

Rehearsals. At 1000, the brigade FSO conducts roll call for the brigade fire support rehearsal for the movement-to-contact. The attendees are listed in Figure 1. The FSO gives the BCT commander's intent and the operation overview before handing it over to the fire support coordinator (FSCOORD) for comments.

After the FSCOORD gives his guidance, the FSO begins the rehearsal by covering the EFSTs, fire support coordinating measures (FSCM) and priorities of fire for the operation. The S2 then sets the enemy situation, and per the BCT rehearsal agenda, each player states his actions, correlating maneuver and fires in turn. Each task force FSO and the COLT platoon leader state the maneuver action and how fires are synchronized, briefing each of his EFSTs, including the primary and alternate observers, target, trigger and effects for each critical event.

The air liaison officer (ALO) gives the aircraft time on station and number of sorties, close air support (CAS) targets and airspace coordination areas (ACAs). He also covers suppression of enemy air defenses (SEAD) and marking round procedures.

The S3s for both FA battalions discuss movement, triggers, range requirements and positioning issues. The targeting officer covers critical friendly zones (CFZs), call-for-fire zones (CFFZs) and radar positioning and movement. The fire direction officer (FDO) covers each EFST by method of attack, systems and rounds fired, shift times and ammunition issues.

The briefers repeat the process for each phase and discuss coordinating instructions and issues. The FDO also reviews the target list. The FSCOORD makes concluding comments to ensure everyone is prepared for the combined arms rehearsal.

It is 1100, and the BCT combined arms rehearsal for the movement-to-contact is underway. The S3 briefs the BCT maneuver action, and then the FSCOORD briefs BCT fires. The FSO stands by with the fire support execution matrix (FSEM) to assist with any questions or issues. As each task force commander completes his briefing of his maneuver action, the task force FSO briefs the corresponding fires event.

Because the fire support rehearsal had been very detailed, the synchronization of fires and maneuver goes very well. At the end of the combined arms rehearsal, the scheme of fires has been confirmed with a clear understanding of what the EFSTs are, how they are tied to the scheme of maneuver, who the observer is, what the target is and what the trigger is.

At 1700, after issues are resolved from the rehearsals and the task forces have refined the targets and CFZs, the assistant FSO begins the net call for the fire support FM rehearsal. This is the final opportunity to verify the target list, no fire areas (NFAs) and FSCMs for the BCT. This is an essential event to make final refinements to the plan. It also allows the company FSOs to monitor the BCT-level rehearsal and hear the scheme of fires.

Execution. The brigade FSO is in the TOC at 0300 to prepare the battle update brief for the movement-to-contact. He meets the targeting officer and the FSCOORD and reviews the target list one last time, verifying the status of the COLTs, reviewing target intelligence updates from the S2 and making final target refinements. He also reviews the combat power of the subordinate fire support elements (FSEs) and firing units.

At 0330, the BCT commander is updated in the TOC. Then he and the FSCOORD get in the commander's M113 armored personnel carrier to move to the tactical command post (TAC), which is positioned forward.

The BCT crosses the line-of-departure (LD) at 0400 to execute the movement-to-contact. In the TOC, the FSO remains at the battle board with the XO, ALO, S2, battle captain and assistant brigade engineer (ABE).

Initially, the information flow is slow. The FSO uses his remote handset to talk to the FSCOORD and the task force FSOs to keep accurate situational awareness. The brigade XO and the brigade FSO conduct several informal targeting

FSO's Mission Analysis Fire Support Briefing

- Fire Support Status, Capabilities and Limitations
- Number of Missions per Munition Type
- Mission Timeline
- Mission Constraints and Restrictions
- Recommended Essential Fire Support Tasks (EFSTs)

Brigade Commander's Guidance for Fires

- Approved EFSTs (Includes Specific Effects on Enemy Formations)
- Use of Special Munitions
- Force Protection Considerations
- Rules of Engagement (ROE) Considerations and Other Amplifying Data

Course of Action (COA) Development Fire Support Products

- Concept of Fires
- Draft of Fire Support Execution Matrix (FSEM)
- Draft Target List Worksheet with Overlay
- Draft Scheme of Fires
- Collection/Reconnaissance and Surveillance Plan (R&S)

COA Wargame/Fire Support Annex Products

- Fires Paragraph
- FSEM
- Scheme of Fires
- Target List with Overlay
- High-Payoff Target List (HPTL)
- Attack Guidance Matrix (AGM)
- Target Selection Standards (TSS) Matrix

Brigade Fire Support Rehearsal Attendees

- Fire Support Coordinator (FSCOORD)
- Brigade FSO and S3
- Task Force FSOs
- Combat Observation Lasing Team (COLT) Platoon Leader
- Direct Support (DS) Battalion S2, S3, Fire Direction Officer (FDO) and Signal Officer
- Reinforcing FA Battalion Commander and S3.

Figure 1: Brigade FSO's Checklist for the Military Decision-Making Process (MDMP)

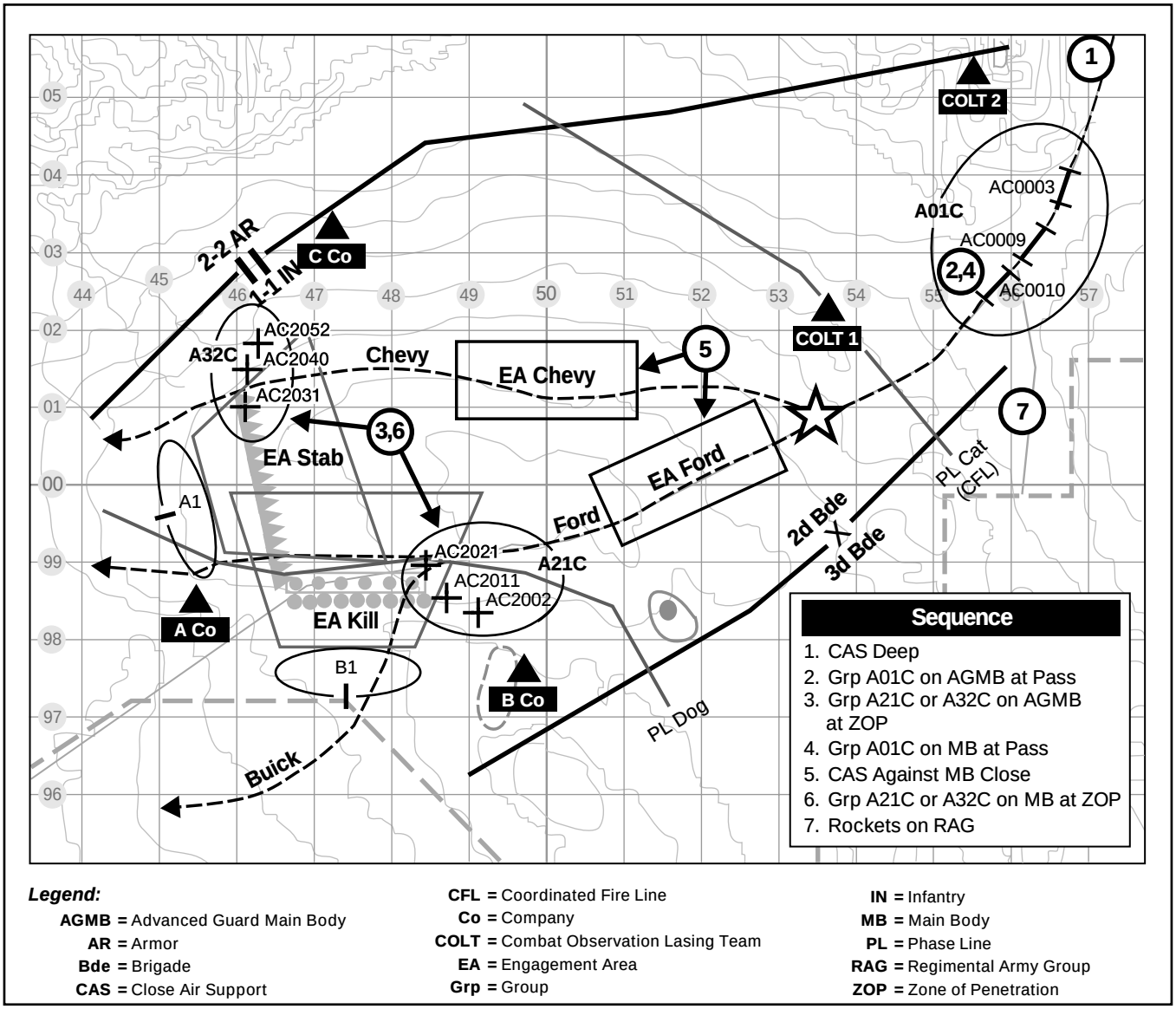

Figure 2: Brigade Scheme of Fires Visualized

meetings to synchronize all aspects of fires to the current friendly situation.

At one point, the brigade ALO gives the 20-minute warning as CAS reaches the initial point (IP). The brigade XO, S2 and FSO, along with the air defense officer (ADO), work closely with the brigade ALO to ensure CAS has the proper focus and pilots know the target locations and formation sizes. The staff also ensures SEAD is accomplished and the correct ACAs are in effect. As the CAS departs the IP, the brigade FSE executes its battle drill for initiating the marking round for the SEAD fires and activating and inactivating the appropriate ACAs.

Receives New Order. After the change of mission, the FSCOORD and BCT commander are involved in the commander of the operations group's (COG) post-battle review. The staff arrives at the TAC at 1200 to issue the order for a security zone attack.

Once all subordinate commanders are present, the S3 and FSO brief the plan using a maneuver and fires format for each phase. At the conclusion of the order, if there are no issues, the FSO huddles with the task force FSOs for 10 minutes to ensure all understand the scheme of fires and responsibility for EFSTs.

After the staff issues the order to the task forces at 1330, the division planners prepare to issue the order for the deliberate attack. And so the MDMP cycle begins again.

Developing the FSO. To have a successful rotation at the NTC, the DS battalion must train its FSEs on critical tactics, techniques and procedures (TTPs) at home station and prepare them for the NTC battle rhythm.

The BCT and task force staffs must conduct the MDMP and orders process multiple times with all participants who will be involved in the NTC deployment. This is essential for developing the standing operating procedures (SOPs), division of duties for FSE personnel and the FSE battle drill. The process must be conducted under constrained conditions to get the staff used to producing a good product while working under pressures similar to those at the NTC.

There are several key relationships the brigade FSO has to develop to succeed. First among these is the BCT S2, then the ALO, the ABE and the aviation liaison officer (LNO). The FSO, S2 and targeting officer have to work closely to ensure the targeting team functions effectively and constantly update one an-

Phase	1	1	1	1	2
Fire Support Event	CAS with SEAD	A01C	A21C or A32C	A21C or A32C	A01C
Task	Disrupt AGMB east of pass.	Disrupt AGMB east of PL Cat.	Disrupt AGMB at obstacle.	Disrupt AGMB at obstacle.	Disrupt MB east of PL Cat.
Purpose	Attrit AGMB to allow TF improved COFM.	Attrit AGMB deep to allow TF direct fire advantage.	Allow TF to destroy with direct fires in EA Kill.	Allow TF to destroy with direct fires in EA Kill.	Attrit MB deep to allow TF direct fire advantage.
Trigger	AGMB at NAI 1	AGMB at NAI 3	AGMB at EA Ford or EA Chevy	AGMB at EA Ford or EA Chevy	MB at NAI 3
Method	MLRS	155/MLRS	155	155	155/MLRS
Target Number	AC1000	AC0003, AC0009, AC0010	A21C = AC2002, AC2011, AC2021	A32C = AC2031, AC2040, AC2052	AC0003, AC0009, AC0010
Target Location	59821433	57010346 56740281 56120221	49239819 49829836 48789886	46000089 46010122 46230151	57010346 56740281 56120221
Unit	2x A-10 4-7 FA (R)	1-51 FA (DS) 4-7 FA (R)	1-51 FA (DS)	1-51 FA (DS)	1-51 FA (DS) 4-7 FA (R)
Munitions	GBU-82 DPICM	DPICM	DPICM	DPICM	DPICM
Volume	6 Rockets	Battery 6 and 6 Rockets per Target	Battery 6 per Target	Battery 6 per Target	Battery 6 and 6 Rockets per Target
Priority Observer	COLT 2	COLT 2	B Company	C Company	COLT 2
Observation Post Location	55910489	55910489	49899739	47210292	55910489
Alternate Observer	AFAC	COLT 1	A Company	A Company	COLT 1
Observation Post Location		53940189	45489847	45489847	53940189
Effects	2x BMP 4x T-80 Destroyed	3x BMP 6x T-80 Destroyed	2x BMP 4x T-80 Destroyed	2x BMP 4x T-80 Destroyed	3x BMP 6x T-80 Destroyed
FSCM	FSCL PL Bob CFL PL Cat	FSCL PL Bob CFL PL Cat	FSCL PL Bob CFL PL Cat	FSCL PL Bob CFL PL Cat	FSCL PL Bob CFL PL Cat
ACA	ACA Blue				
Remarks	CFZ established over TF BPs.	CFZ established over TF BPs	CFZ established over TF BPs.	CFZ established over TF BPs.	CFZ established over TF BPs.

Legend:

ACA = Airspace Coordination Area
AFAC = Airborne Forward Air Controller
AGMB = Advanced Guard Main Body
BMP = Tracked Infantry Combat Vehicle
BPs = Battle Positions
CAS = Close Air Support
CFL = Coordinated Fire Line
CFZ = Critical Friendly Zone
COFM = Correlation of Forces Matrix
COLT = Combat Observation Lasing Team
DPICM = Dual-Purpose Improved Conventional Munition
(DS) = Direct Support
EA = Engagement Area
FSCL = Fire Support Coordination Line
FSCM = Fire Support Coordinating Measures
GBU = Guided Bomb Unit
MLRS = Multiple-Launch Rocket System
MB = Main Body
NAI = Named Area of Interest
PL = Phase Line
(R) = Reinforcing
SEAD = Suppression of Enemy Air Defenses
TF = Task Force

Figure 3: Example of Brigade Scheme of Fires

other to refine targets and battlefield situational awareness.

The ALO must be integrated into each training event the BCT conducts. The FSO must be aggressive in developing a relationship with the ALO and include him in training if the ALO is not aggressive in involving himself. It is critical the BCT staff and the FSE specifically develop a simple and effective CAS battle drill, including the FA battalion for SEAD operations and marking rounds. If at all possible, the FSO should start planning six to eight months in advance to request live CAS at home station to train the methodology for airspace deconfliction and SEAD and marking round timing.

One member of the FSE should become the expert and point-of-contact for CAS and artillery integration. The aviation LNO also must have a close relationship and develop good SOPs with the FSE to establish Army airspace

command and control (A^2C^2) procedures and SEAD drills for the BCT and integrate Army aviation operations.

The ABE has to understand the relationship of fires and obstacles. He briefs the FSO on the obstacle plan and coordinates indirect fires and the observers the BCT wants on those obstacles. He also either must understand how a family of scatterable mines (FASCAM) minefield affects the delivery of fires or at least know that any FASCAM he plans has to be coordinated with the FSO—not planned in isolation.

The FSE should develop an easily understood annex that can be used at all levels to execute the scheme of fires. It can be a matrix, a sketch with notes, written or a combination of those. Most of all, it must be extremely detailed, listing EFSTs, targets, primary observers, alternate observers, triggers, firing units, method of attack, quantified effects, FSCMs, priority of fires (POFs), coordinating instructions and remarks, at a minimum.

Units must have an SOP that lays out detailed rehearsals with a clear agenda. Rehearsals generally should be conducted before the BCT combined arms rehearsal so the FSCOORD can ensure fires are synchronized ahead. It's imperative that fire support rehearsal attendees are there on time and prepared to brief.

The fire support rehearsal is run by the FSO as he planned the operation and understands it best. This allows the FSCOORD to absorb the plan, see problems and identify issues. The FM rehearsal is the confirmation of the fire support plan after refinements from the combined arms rehearsal and intelligence updates are completed. It also rehearses the communications net and includes the verification of the target list and FSCM.

The targeting meeting is the most neglected event of the planning process. Often, it is a "hand wave" or a token meeting. The maneuver leaders need to take ownership of this event. This is not only where fire supporters develop the HPTL, but also where they set priorities and develop a collection plan to support their targeting priorities.

The targeting team plans fires for the brigade to engage the enemy. The brigade staff must forecast and anticipate events to attack the enemy simultaneously throughout the battlefield.

The targeting effort is the critical *decide* element in the *decide-detect-deliver-assess* methodology. The *decide* function is important and requires close integration between the commander, S2, S3 and the FSE cell.

The targeting team includes, but is not limited to the brigade commander, brigade XO, brigade S2, brigade S3, DS FA battalion commander (FSCOORD), brigade FSO, targeting officer and intelligence and electronic warfare support element (IEWSE) personnel. Also included are other staff members, as necessary, including the ALO, chemical officer, S3 air, ADO, engineer and, if the unit has a brigade reconnaissance troop (BRT), its commander.

The targeting meeting takes many forms, both formal and informal, that include combinations of the targeting team members, depending on mission, enemy, terrain, troops and time available (METT-T) throughout the planning and execution cycle of battle.

The brigade, task force and company FSOs train on building engagement areas (EAs) as part of a combined arms team. This includes developing good targets, getting the grids of the targets using the precision lightweight global positioning system receivers (PLGRs) and identifying triggers in the same way. FSOs should use battle calculus to develop technical and tactical triggers, triggers for the transition of fires deep to close and triggers or criteria for the commander to shift priorities of fire.

The unit should develop standardized trigger and target marking kits and train fire support teams (FISTs) to use them at home station—important tools for FSOs. The fire supporters also must learn how the enemy fights, how he uses terrain, and how to target and plan observation posts (OPs) based on the enemy's doctrine.

A performance trend at the NTC is units are not planning OPs that support the scheme of fires. Units need to train on placing observers to execute the EFSTs and planned targets. Too often, the FISTs or COLTs are behind terrain or in the wrong place to see the target, erect the targeting head and execute the mission.

First, the observer responsible for a target must be identified and OPs planned that support attacking that target using terra-base products. Additionally, units must train FSOs and commanders that observers must get to terrain where they can see the target on time and have their equipment ready to observe and execute.

The art of fire support is hard and, unlike the science aspects of gunnery and battle calculus, requires judgment and experience to be successful. To help develop the FSO's fire support art, we have outlined some TTPs for success at the NTC or on any battlefield.

What makes the difference in unit performance is a rigorous, well-planned home-station training program that anticipates the missions and battle rhythm of the NTC. Ultimately, the key to success is a standardized method of planning, preparation and execution tied to solid SOPs that have been practiced under various conditions and constraints.

As observer/controllers (O/Cs), our mandate is to coach, train and mentor fire supporters who come to the NTC. We are committed to helping units learn to fight most effectively on the NTC battlefield. *Train the Force!*

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FSNCO SFC Gary Hunsucker, 4-11 FA, 172d Infantry Brigade (Sep), looks over fire support graphics.

The Battalion/Task Force FSNCO and the MDMP

by Sergeant First Class Edward J. Zackery

Sergeants first class (SFCs) working in battalion/task force fire support elements (FSEs) as fire support NCOs (FSNCOs) usually are not involved in the military decision-making process (MDMP) during the planning and preparatory phases of their operations. And, as a key executors of the plan, they should be.

The planning steps in the MDMP are receipt of mission, mission analysis, course of action (COA) development, COA analysis (wargame), COA approval and orders production.

As many as 80 percent of the FSNCOs who come to the Combat Training Centers (CTCs) lack the experience, training and knowledge necessary to participate in the planning process with a battalion or task force staff. The process can be intimidating for even the most experienced FSNCOs but especially so for newly promoted SFCs who have little or no training on mission analysis or COA comparison.

In this environment, the FSNCO is left out of planning and, therefore, seldom understands the integration of fire support with the scheme of maneuver. As a key executor of the battalion/task force fire support plan, he needs to know the *hows* and *whys* of the plan and how they'll complement each other during the course of the fight.

The Issue. The Military Occupational Specialty 13F Fire Support Specialist Advanced NCO Course (ANCOC) doesn't prepare an SFC to be involved in the MDMP. Fire support officers (FSOs) and maneuver staffs need to understand this. In many cases, the FSNCO's level of proficiency comes solely from his FSO's mentoring. Even the Sergeants Major Academy's NCO Battle Staff Course at Fort Bliss, Texas, doesn't get into the level of detail in planning most battalion/task force staffs achieve when preparing for a battle.

An FSNCO can be very knowledgeable and hard-charging but still lack the knowledge to pull simple things from a brigade operations order (OPORD) for the FSO's mission analysis briefing. This is partly because he doesn't understand the concept of the ongoing staff estimate; in most cases, no one has trained him in what's needed for the mission analysis briefing. Telling the FSNCO to extract from the brigade OPORD what he thinks the FSO will

need for the briefing usually ends in disappointment for the FSO.

The FSO expects his FSNCO to understand the orders process. However, only when the FSE is deployed does the FSO realize his FSNCO lacks the knowledge to participate in the MDMP. By then, due to the high operations tempo (OPTEMPO), it's too late to teach the FSNCO the orders process.

FSOs and maneuver staffs correctly rely on the targeting officer to start the planning process while the FSO is at the brigade OPORD briefing—the targeting officer must be able to accomplish the mission analysis. But the FSNCO's MDMP duties should not be left to the targeting officer. *FM 6-20-40 Tactics, Techniques and Procedures (TTPs) for Fire Support Brigade Operations, Heavy* and *FM 6-20-50 TTPs for Fire Support Brigade Operations, Light* clearly state that the FSNCO "must be able to perform all the duties of his FSO." The FSO needs a knowledgeable, trained FSNCO to have a fully functional FSE and maneuver tactical operations center (TOC).

For some FSNCOs, it's simply a matter of getting involved in the MDMP. It's the FSNCO's job to participate in the planning process. He first should read *FM 101-5 Army Planning and Orders Production* to understand the orders process.

Then he needs the same training that most battalion/task force staffs have before a major deployment. This way he can watch, ask questions and understand the different steps of the MDMP. Only after the FSNCO has begun to understand the planning process can he begin to use the knowledge he has gained throughout his career to integrate fires with maneuver.

The FSO must ensure the maneuver staff understands the importance of having the FSNCO at the table during the planning process. The fire support sergeant brings his technical expertise and years of experience—the capabilities of the company fire support team (FIST) and the knowledge and experience of his personnel. He's the technical expert and knows the capabilities of the equipment in his platoon.

Knowledge of and participation in the MDMP is usually an officer function on the maneuver side. The FSNCO should *not* be intimidated.

A Solution. The 13F ANCOC program of instruction (POI) should cover the MDMP at the level of detail that the battalion/task force NCO needs to understand it. The FA School could combine a week of the FA Officer Career Course (FACCC) that has instruction on the MDMP with ANCOC so artillery officers and NCOs can work and learn together. This would allow them to understand each other's role in the orders process at the battalion/task force and the brigade levels. It also would help the NCO realize he's an integral part of the orders process.

The FSNCO must participate in train-ups that include the FSO and maneuver staff at home station. If this training doesn't occur, the FSNCO becomes just another NCO in the TOC and not a fully integrated executor of the maneuver/fire support plan.

During planning and preparation for a deployment, the FSO must train his FSNCO. A simple training plan can include only the FSO and FSNCO, or the brigade FSO and FSNCO can implement a series of combined officer-NCO professional development sessions on the subject.

The bottom line is that the FSO must train the FSNCO on the MDMP. There is no formal training available to him. For the FSNCO who suggests that knowing the MDMP is really not his job, I suggest that he step back and reevaluate himself as an NCO.

The most immediate training solution lies with the FSNCO. He must ask questions aggressively; he must have the FSO explain *in detail* how the supported maneuver unit planning process works.

Understanding the MDMP is the first step; watching it put into action at the battalion/task force level is next. The more the FSNCO participates, the more knowledgeable he becomes.

The sooner the FSNCOs get formal instruction on the MDMP, the better. The FSNCO must continue to learn and grow as a fire supporter and be the FSO's right-hand man, capable of filling the FSO's shoes in his absence.

The company FSO of 1-9 FA, 3d Infantry Division (Mechanized), and his FSNCO discuss engagement area development at the NTC.

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With the Click of a Mouse
Fratricide in BCTP

by Lieutenant Colonel (Retired) Thomas D. Morgan

Fratricide is the employment of friendly weapons and munitions with the intent to kill the enemy or destroy his equipment and facilities, which results in unforeseen and unintentional death or injury to friendly personnel.

TRADOC Fratricide Action Plan[1]

Realistic Casualty Wargaming Before Desert Storm (Photo Courtesy of CENTCOM Public Affairs Office)

"Deadly US Salvo Sparks Acrimony in Military Briefing—During a recent Gulf War-like [computer assisted training] scenario in a Third World nation, an enemy special purpose force (SPF) ran into a CARE-operated refugee camp containing about 10,000 displaced persons. Seeking to hide, the enemy SPF unit was detected by the modern systems of a Force XXI Division. Two hundred and fifty-two multiple-launch rocket system (MLRS) dual-purpose improved conventional munitions (DPICM) were fired at the SPF unit. The results were 98 refugees killed and 359 wounded." [Story taken from the Battle Command Training Program's (BCTP's) Warfighter exercise newspaper.]

What caused this fratricide in a modern, digital "situationally aware" unit? CARE's refugee camp was protected by a no-fire area (NFA) specifically noted in the unit's fire support plan. The NFA had been duly entered in the Force XXI artillery unit's advanced Field Artillery tactical data system (AFATDS).

The problem occurred when the MLRS battalion playing in the training decided to override its AFATDS. Missions were backed up in AFATDS, and the operator (or someone) elected to send the fire mission directly to the firing unit, resulting in what would have been a profound tragedy in actual combat.

Although this fratricide didn't happen in combat, it did occur in a BCTP computer-assisted wargame designed to prepare units for combat. The exercise was for Force XXI units equipped with the new digital Army tactical command and control systems (ATCCS). In the rush to digitization and modernization, have we determined and addressed these new systems' potential for increased fratricide?

In another battle from the same computerized BCTP scenario, the 1st Combined Arms Battalion (1-CAB) of the Army's new Force XXI Division collided with an enemy armored brigade. Supported by Crusader and the latest MLRS, the battalion fire support officer (FSO) requested "all available fire" on the armor-heavy enemy force.

Crusaders and MLRS fired 290 sense and destroy armor (SADARM) rounds and 30 MLRS smart tactical rockets (MSTARs). When the battle ended, the effects on the enemy were catastrophic: 28 tanks, 13 armored personnel carriers (APCs) and various other weapons systems destroyed, rendering the enemy unit combat ineffective.

The pile of burning junk in the foreground could be one of our own armored fighting vehicles if artillery fires are not carefully controlled.

However, 16 of our M1A2 Abrams tanks and three of the M2/3 Bradley fighting vehicles in the 1-CAB also were destroyed. They had moved under the footprints of the SADARM and MSTAR munitions. These high-tech, precision, fire-and-forget munitions go after hard, armored targets with great effectiveness and lethality. However, they don't have a "friend-or-foe" detection capability and will kill whatever falls within their footprints—in the case of this scenario, our own tanks and Bradleys.

This short battle was a pyrrhic victory for the 1-CAB. If the combat had been real, many burning hulks and fresh body bags would have greeted the brigade commander when he inspected his unit after the battle.

Digitization, automation and new systems with longer ranges and more lethal warheads produce quick, effective results. Yet, the Army could pay a terrible price in friendly blood and assets on a future battlefield unless we exercise adequate situational awareness and personnel are trained and experienced in these new capabilities. The chances for success are greater using Force XXI technology while the potential for dreadful results also has increased.

FA units must know exactly where their targets are located, the capabilities (and limitations) of their new systems and munitions and the disposition of friendly forces and then apply positive clearance of fires procedures. And they must drill safe procedures in exercises such as computerized BCTP Warfighters exercises before war is real. The "Pacman" mentality or getting swept up in clicks of the mouse to get computerized "kills" may seem to have no real consequences in the exercise but can teach soldiers dangerous habits that can translate into tragedy in combat.

This article discusses fratricides in BCTP. As a Fire Support Analyst with BCTP for 12 years, I have witnessed an alarming increase in the number of FA firing incidents leading to fratricide. It also has been my experience that when commanders emphasize attention to details and correct procedures to avoid fratricide, the computerized fratricide incidents go away. Hopefully, commanders will read this article today and prepare their soldiers to protect friendly personnel tomorrow.

Perceptions. In the more than 100 BCTP Warfighter exercises administered from 1988 to 1999, artillery fratricide incidences were discussed in most after-action reviews (AARs). In the "fog and friction" of combat, some fratricide inevitably can be expected. However, with better command and control systems resulting in better overall situational awareness, the number of fratricides should be on the decline. This isn't the case with BCTP exercises. I have witnessed a distressing increase in the number and frequency of fratricide incidents in BCTP Warfighters.[2]

Artillery fratricide is a highly sensitive topic and a top priority of the AAR process due to its seriousness and high level of command interest. If we truly train as we fight, the future doesn't look good. There is little reason to believe that fratricide rates in real war would be lower than in training.

In his seminal study of 269 fratricide incidents, "Amicide: The Problem of Friendly Fire in Modern War" (1982), Lieutenant Colonel (Retired) Charles Shrader concluded that a fratricide rate of less than two percent occurred from World War I through Vietnam.[3] This was considered almost statistically insignificant.

The Combat Training Centers (CTCs) track fratricide engagements. Fratricide caused by artillery is mostly from unobserved fires. The Joint Readiness Training Center (JRTC), Fort Polk, Louisiana, the National Training Center (NTC), Fort Irwin, California, and the Combat Maneuver Training Center (CMTC), Hohenfels, Germany, attribute fratricide generally to clearance of fires problems associated with massing units, the high density of weapons systems, poor quality rehearsals and poor communications.[4]

At the NTC, more specific reasons included incorrect target identification, battlefield disorientation, ineffective fire control measures, lack of fire discipline and sleep deprivation.[5] A Center for Army Lessons Learned (CALL) study from 1986 to 1990 indicated fratricide at the NTC averaged 11 percent.[6]

In the 1980s, the findings in Lieutenant Colonel Shrader's study led the Army to believe that fratricide was manageable. Two percent was more or less accepted as the inevitable price of battle. The best way to prevent fratricide was to train soldiers for combat—the same skills needed to win wars would be the best fratricide prevention. The CALL study indicated a much greater problem than originally thought. The advent of longer-range weapon systems and the use of more sophisticated warheads created a new set of fratricide problems for unobserved fires.

Training. The CALL study dispelled the idea that currently fielded technological enhancements were likely to moderate the friendly fire problem. Originally, adjudicating fratricide from simulated combat was difficult and could be largely subjective. Trainers had problems evaluating fratricides so corrections could be made. Now, BCTP simulated wargames provide trainers an opportunity to objectively assess the magnitude and causes of fratricide.

The Corps Battle Simulation (CBS) portrays friendly fire losses from artillery, allowing the BCTP to accurately determine fratricide during wargames. No overall percentage statistics have been assembled, but fratricide incidents continue to occur in BTCPs.

As would be expected from command and control-type wargames, faulty or outdated fire support coordinating measures (FSCM) and lack of situational awareness are frequently the problem. An example of this is when a friendly maneuver unit becomes engaged after crossing a permissive FSCM that hasn't been updated, such as a fire support coordination line (FSCL) or coordinated fire line (CFL). The modern battlefield is a crowded place, and units moving through another unit's area of operation (AO) while engaged in combat can lead to fratricide.

Units depend on digital command and control devices, such as the initial fire support automated system (IFSAS) and AFATDS. When unskilled operators make mistakes entering data, fratricide may happen. Frequently, the operator enters the forward observer's (FO's)

Unit Hit	FA Unit Fired	BDA	Cause
Infantry Platoon	2 Batteries	4 Troops	Fired "danger close" less than 650 meters; violated unit SOP.
Infantry Platoon	1 Battery and 2 Firing Platoons	9 Troops	Sent wrong grid through IFSAS.
Div Arty HQ	1 Battalion	75 Troops and 39 Vehicles/Equipment	Sent incorrect "voice" grid; IFSAS not working or bypassed.
Infantry Battalion	1 Battery	4 Vehicles	CBS unit radii overlapped.
Infantry Battalion	1 Platoon	11 Troops	Fired HE instead of smoke; HE mission not cleared. IFSAS operator error.
Infantry Battalion	1 Platoon	1 Troop and 10 Vehicles/Equipment	Sent "voice" grid short of CFL.
Battalion Task Force	1 Battery	1 Troop	"Danger close" fire not cleared.
Battalion Task Force	1 Battery	3 Troops and 1 Vehicle	IFSAS grid from CFR detection short of CFL; lack of clearance.

Legend:

BDA = Battle Damage Assessment
CBS = Corps Battle Simulation
CFL = Coordinated Fire Line
CFR = Counterfire Radar
Div Arty = Division Artillery
IFSAS = Initial Fire Support Automated System
HE = High Explosive
HQ = Headquarters
SOP = Standing Operating Procedures

Figure 1: Examples of Division-Level Fratricide. In this sampling, all the fratricide incidents occurred within a two-day period.

location for the target grid. Because the FO is usually a member of a fire support team (FIST) or combat observation lasing team (COLT) close to a maneuver unit, rounds hitting the FO also can kill other personnel.

Contributing to this problem is that MLRS is fired because of its range, effectiveness and survivability (shoot and scoot) features, but MLRS DPICM bomblets cover a large area and should not be fired for close-in supporting fires. In many instances during Warfighters, units continued to fire artillery, including MLRS, when the friendly forces were too closely engaged with the enemy. At that "danger close" point, mortars should have been used. Audie Murphy called artillery fire in on himself, but he was the last man left in his unit.

Proper clearance of fires *must* include positive identification of friends and foe. Situational awareness is critical for safe delivery of artillery fires. Knowing your location at all times, as well as the location of friendly, enemy and neutral/noncombatant units or personnel are key to survivability. Lack of positive target identification and situational awareness are the main contributors to BCTP artillery fratricides. These are easy to ignore in a simulated wargame when no one is actually killed and mistakes may or may not be detected or no one is held responsible for the incidences.

Other causes for BCTP fratricide include poor map reading and communication skills in the simulation center or the field tactical operations center (TOC), FSCMs are not updated, failure to coordinate among units and computer errors ("fat-fingered" CBS keyboard operators).

During a 1996 division-level Warfighter, fratricides were so numerous that a chart was used during the AAR to illustrate them. (See Figure 1 for the chart with the unit identifications purged.) These fratricides occurred in only two days.

Digital fire control devices that are part of the Army's new Battle Command System claim to help prevent fratricides. In BCTP, human mistakes in entering data into those systems produce more errors than system failures. It's interesting to note that during BCTP Warfighters when fratricides started to occur, they stopped when commanders took forceful measures to ensure that responsibility for human errors was fixed on the right people. Mock Article 15 investigations during a Warfighter were a therapeutic remedy.

Before a recent Warfighter, a unit sent BCTP an email reporting a deluge of artillery fratricides during its ramp-up for the exercise. However, when the human element was emphasized during the unit's Warfighter (command intervention and attention to detail), the fratricides stopped. Also when the BCTP staff gave classes on the causes of fratricide, the incidences of fratricide during Warfighters were significantly fewer.

It appears the pace of modernizing the battlefield is moving faster than humans can keep up. A study of fratricides reveals the solution to the problem is more apt to be human than mechanical. More emphasis on training; combat conditioning; fire discipline; planning, coordinating and synchronizing operations; and keeping soldiers informed may lower incidences of fratricide better than adding more high-tech equipment.

Digital operators must be better trained before the advertised results of the digital fire control devices will be seen in Warfighters. That means 50-year-old colonels and generals must understand their high-tech systems and be able to supervise 18- and 20-year-old specialists on digital keyboards.

Examples in Figure 2 are from a 1997 corps-level Warfighter showing how the lack of training and discipline can cause fratricides in a relatively short period of time. These fratricides occurred in two and one-half days. Again, the figure shows generic units but the data was taken from an actual Warfighter.

A critical aspect of fratricide is the human dimension. Computer operators

Unit Hit	FA Unit Fired	BDA	Cause
Recon/Surv Unit	2 Batteries	6 Troops and 10 Vehicles	Failed to coordinate artillery and maneuver.
Infantry Battalion	1 Battery	1 Troop	Division FSE cleared fires short of CFL.
ACR Platoon	1 Battery	8 Troops and 2 Vehicles	Cleared fires improperly.
ACR Platoon	1 Battery	58 Troops and 25 Vehicles/Equipment	Cleared fires improperly.
ACR Platoon and Engineer Platoon	1 Battery	58 Troops and 45 Vehicles/Equipment	Refired old, uncleared mission.
Cavalry Troop	1 Battery	6 Troops and 9 Vehicles/Equipment	"Danger Close" reinforcing artillery fired too close.

Legend:
ACR = Armored Cavalry Regiment
BDA = Battle Damage Assessment
CFL = Coordinated Fire Line
FSE = Fire Support Element
Recon/Surv = Reconnaissance/Surveillance

Figure 2: Examples of Corps-Level Fratricide

and supervisors get blamed for many of the fratricides during BCTP Warfighters. When commanders and soldiers are tired, they make mistakes. Sleep deprivation can cause irrational decision-making. Soldiers in the simulation center also experience sleep deprivation because of the length of the Warfighter (three to five days training followed by five to seven days of the exercise) with 24-hour operations during the Warfighter.

If commanders in the simulation center don't ensure proper rest for their personnel just as they would in the field, the IFSAS/AFATDS operators won't perform well. Such critical skills as command and control, fire control, awareness of friendly and enemy troops, and target designation and tracking are some of the first skills to be decremented by loss of sleep.

Conclusion. There is reason to suspect that the advance of technology has increased rather than reduced opportunities for fratricide. Given that less time is spent training in rigorous field conditions, more emphasis must be placed on the quality and intensity of training during the time available—including computer-assisted simulations.

There is a tendency to write-off CBS errors as something that won't happen in real life. However, lack of training or attention to detail with no command emphasis in the simulation center transfers to the field. Such carelessness and complacency are symptoms of a disease that infects all the unit does.

For example, in an actual incident in Vietnam, a 155-mm self-propelled battalion had been in the same position to fire counterfire for several months when the division headquarters was rocketed. The unit then fired a classic 200-mil error because the M109 gun sights had their "windows" closed. It was thought that because the unit rarely moved, this was the best way to set the sights. As a result, the rounds all landed in the division firebase where a battalion was housed for a "stand-down."

During the counterfire, a 95-pound shell landed in a slit trench full of soldiers taking shelter from North Vietnamese Army (NVA) rockets and blew them to pieces. Afterward, the only things recognizable were the telltale pieces of the fuse in the hole at the bottom of the trench. The shell report pointed to the friendly firing battery.

Most Redlegs today have not witnessed such a horrible example of carelessness. The unit was in a rut and succumbed to base-camp complacency.

Our units in BCTP must never be allowed to be careless or become complacent. For what we see during a Warfighter may mirror the next real battle.

Lieutenant Colonel (Retired) Thomas D. Morgan retired 30 September 1999 as a Fire Support Analyst working for the contractor supporting the Battle Command Training Program (BCTP) at Fort Leavenworth, Kansas; he worked for BCTP for 12 years, since the program's inception. During his military service, he served as Investigating Officer for approximately 20 actual artillery fratricide incidents in the continental United States and Vietnam. He commanded two firing batteries in the 5th Battalion, 16th Field Artillery, part of the 4th Infantry Division at Fort Lewis, Washington. Among other assignments, he was a Gunnery Instructor at the Field Artillery School, Fort Sill, Oklahoma, and an Executive Officer of 1st Battalion, 321st Field Artillery in the 101st Airborne Division in Vietnam. He's a graduate of the Command and General Staff College, Fort Leavenworth, and holds a Master of Arts in History from Pacific Lutheran University in Tacoma, Washington, and a Master of Public Affairs from the University of Missouri at Kansas City. Lieutenant Colonel Morgan retired from the Army in 1986.

Endnotes:

1. US Department of the Army, "Fratricide: Reducing Self-Inflicted Losses," Newsletter N 92-4, Fort Leavenworth, Kansas, Center for Army Lessons Learned, US Army Combined Arms Command, April 1992, 3.
2. This article was reviewed by the BCTP staff, Fort Leavenworth, Kansas. Although the Corps Battle Simulation system used in BCTP does track fratricide incidents by exercise, there is no means currently in place to consolidate data from Warfighter to Warfighter and determine the relative frequency of fratricide incidences from year to year or determine if there is an increase in the number of incidents. The assessment that FA fratricide incidences in BCTP have increased is that of the author who worked as a BCTP Fire Support Analyst for 12 years.
3. Lieutenant Colonel (Retired) Charles R. Shrader, *Amicide: The Problem of Friendly Fire in Modern War,* (US Army Combat Studies Institute, December 1982).
4. Major General (Retired) John R. Landry, "Fratricide in the Gulf War," A paper presented at the annual Society of Military History Conference in Alexandria, Virginia, April 1996. General Landry cited reasons for fratricide incidents at the Combat Maneuver Training Centers (CTCs) from the Center for Army Lessons Learned (CALL).
5. Landry, 10. General Landry obtained the NTC information from CALL.
6. Kenneth K. Steinweg, "Dealing Realistically with Fratricide," *Parameters* 23 (Spring 1995), 15.

Paladins from A/1-7 FA occupy a position by a Serb monstery near Novo Brdo, Kosovo. (Photo by LTC James Waring)

Role and Mission of the FA in TF Falcon, Kosovo

by Lieutenant Colonel James M. Waring and Major C. Phillip Royce

On 12 June 1999, the 1st Battalion, 7th Field Artillery (1-7 FA) was deployed to the Combat Maneuver Training Center (CMTC) at Hohenfels, Germany, for a scheduled rotation with its maneuver force, the 2d Brigade Combat Team (2d BCT), 1st Infantry Division (Mechanized). On that day, 1-7 FA and its BCT received a warning order (WARNO) for deployment to the province of Kosovo in the former Republic of Yugoslavia.

The battalion was to join the NATO Kosovo Force (KFOR) as part of the international civil and security presence designated Operation Joint Guardian II. This was authorized by United Nations Security Council Resolution 1244 and under the unified NATO command. Included in the peace agreement was the Military Technical Agreement (MTA) that detailed the Serb force withdrawal from Kosovo.

Operation Joint Guardian II came about to complete the NATO air campaign by providing a ground force presence to deter aggression and enforce the provisions of the UN resolution and MTA. This would prove easier said than done.

This article discusses 1-7 FA's lessons learned in Operation Joint Guardian II and highlights illumination missions 1-7 FA fired for the KFOR (including for Russians), the first US FA combat missions fired in Balkan peace support operations.

Mission. 1-7 FA deployed as part of Task Force (TF) Falcon, the US TF assigned to the Multinational Brigade-East (MNB-E), KFOR. 1-7 FA relieved TF 1-27 FA (Multiple-Launch Rocket System, or MLRS), V Corps Artillery, which had relocated from Albania as part of TF Hawk. TF Falcon fell under the command of the Assistant Division Commander (Maneuver), 1st Infantry Division. The 2d BCT relieved forces of the 1st Armored Division and 26th Marine Expeditionary Unit (MEU) and assumed the mission to "monitor, verify and, when necessary, enforce compliance with the MTA, provide humanitarian assistance in support of UNHCR [United Nations High Commission for Refugees] and establish basic law and order and core civil functions."

By 4 July, most of the 1-7 FA force package was on the ground at the intermediate staging base (ISB), Camp Able Sentry, Macedonia. Force requirements and a personnel cap largely dictated how the battalion task organized for the deployment. After extensive analysis and many changes, the battalion ended up deploying as shown in Figure 1. D/1-33 FA from the newly formed divisional multiple-launch rocket system (MLRS) battalion deployed early in the flow and was the first 1st Infantry Division Artillery unit on the ground in Kosovo.

Upon arriving at Camp Bondsteel, Kosovo, TF 1-7 FA received C Battery, 1-319 FA, 82d Airborne Division, with the continuing non-standard mission "OPCON [under operational control] for fires" the battery had established with TF 1-27 FA. Technically, C/1-319 FA was attached to 2-505 Infantry of the 82d Airborne Division, but TF 1-7 FA established a relationship to ensure positive command and control of all artillery indirect fire systems. This organization was labeled "TF Lightning" and consisted of more than 400 soldiers.

The command and control element for fire support in the TF Falcon tactical command post (TAC) was provided by the 1st Infantry Division fire support element (FSE) and augmented with the target production section (TPS) from D/1-33 FA. The 1-7 FA commander assumed duties as TF Falcon's fire support coordinator (FSCOORD).

Role of the Artillery. Initially, there was a great deal of discussion as to whether the TF Falcon "troop list" would include artillery as part of the deployment package. This discussion came as a result of the role of artillery in previ-

ous peace support operations in the Balkans coupled with concerns for personnel tempo (PERSTEMPO) and the force "cap" (mandated maximum number of US troops).

Field Manual (FM) 100-23 Peace Operations is based on previous operations, including Haiti, Somalia and Bosnia-Herzegovina, and provided a framework for artillery employment. As stated in FM 100-23, "Fire Support assists commanders in the careful balance of deterrent force with combat power to accomplish the peace operation mission and protect the force." Deterrence and force protection were pervasive arguments for including artillery.

Previous deployments to the Balkans for peace operations, such as the Implementation Force (IFOR) and Stability Force (SFOR) missions in Bosnia, initially included artillery units with clearly defined missions. As the environment stabilized, the artillery role diminished. The current mission in Bosnia still includes US artillery units without their howitzers.

The comparison between Bosnia and Kosovo was misleading in many ways—which quickly became apparent after arriving in Kosovo. The most glaring difference was the level of violence, crime and civil disobedience in Kosovo; murder, assault and arson were a daily occurrence. US forces already in theater had been involved in many situations where automatic gunfire was exchanged; the soldiers of 2d BCT were exposed immediately to much of the same. The absence of a civil government structure required the KFOR to assume these duties.

Soldiers of TF Lightning assumed a wide variety of missions in support of this challenging operation. First, the TF maintained a visible and responsive fire support structure to provide timely and accurate fires if the situation demanded it. The TF accomplished this by maintaining two "hot guns" on Camps Bondsteel and Montieth, with "hot" platoon operations centers (POCs) linked digitally to the battalion fire direction center (FDC) and the TF Falcon FSE. This gunnery team was in place 24-hours-a-day, seven-days-a-week in a Ready Condition (REDCON) 2 status (15-minute

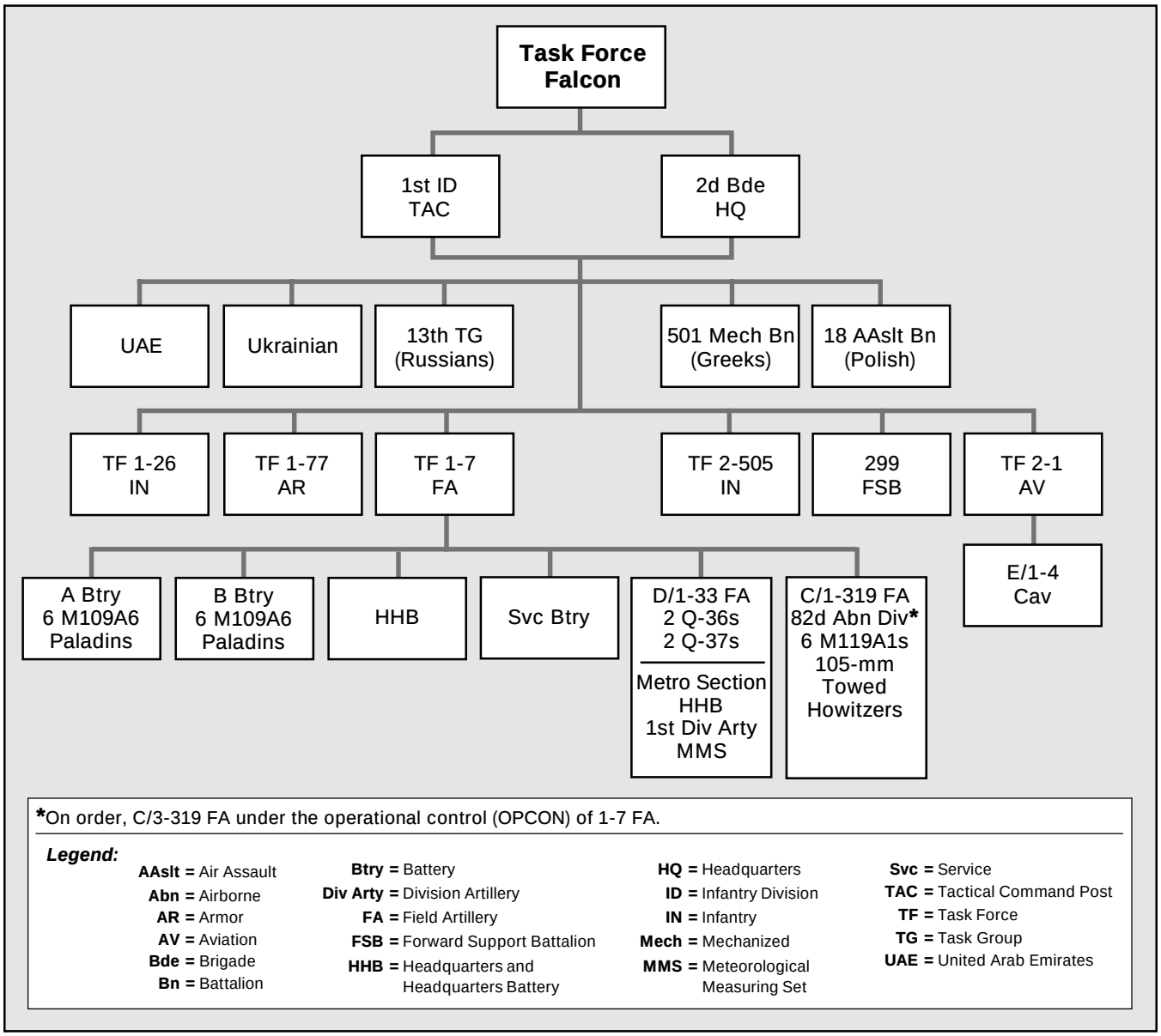

Figure 1: Task Organization of Task Force Falcon and its Artillery. Force requirements and a personnel cap dictated the organization of 1-7 FA.

response time) unless the tactical situation demanded a higher state of readiness. Additionally, TF Lightning provided personnel to man the base camp's perimeter security force.

Competing Requirements. TF Lightning soldiers began augmenting maneuver forces on checkpoint operations, mounted and dismounted patrols and various security operations "outside the wire" in the MNB-E area of responsibility (AOR). This was driven by a manpower-intensive requirement for soldiers "on the ground" and the limited troops available. Our view was this presented a more suitable mission for our soldiers than working base camp security and "red cycle" tasks.

Although the battalion had received some basic training at the Individual Readiness Training (IRT) and Mission Rehearsal Exercise (MRE) at the CMTC in Hohenfels before deploying, our missions required an extensive train up and preparation. The battalion conducted some "right seat rides" with the soldiers from TF 1-27 FA that were extremely helpful and established a baseline for what to expect. The battalion went a step further and coordinated training with our maneuver forces on patrolling, checkpoint and security operations.

Many of these tactics, techniques and procedures (TTPs) were adopted from the Bosnia lessons learned and the Center for Army Lessons Learned (CALL) products from Fort Leavenworth, Kansas. Battery commanders, platoon leaders and platoon sergeants quickly developed standing operating procedures (SOPs) and troop-leading procedures for conducting each of these operations. As always, rehearsals were essential for setting the conditions for success.

One of TF Lightning's most challenging missions was the security and logistical support to the International Crimes Tribunal Yugoslavia (ICTY) forensic mission. The ICTY conducted operations at mass gravesites throughout the AOR to discover and document evidence of alleged war crimes committed by belligerent forces before the NATO and KFOR units arrived.

This was a unique and difficult mission for TF Lightning because of the fundamental nature of the operation, which involved exhuming human remains of all ages from mass gravesites. It also required the TF to work with a wide variety of forensic investigators and pathologists. For this mission, TF Lightning soldiers worked with Canadian, Austrian, Icelandic, Swiss, British and Irish personnel, among others.

Although the TF soldiers didn't have to actually remove remains from gravesites, they were close to these operations and provided the equipment, logistics and security. It was tough duty, but it exposed many of the soldiers to the brutality of this conflict and the harsh realities local nationals had faced before their arrival.

Fire Support. Fire support personnel from TF Lightning were immediately put to work operating in local villages and towns with their respective maneuver forces. Less than two weeks after their arrival, fire support personnel with 1-26 Infantry engaged in a firefight in the city of Gnjilane. Shooting erupted when local belligerents fired on US forces to evade capture after committing crimes.

TF Lightning also positioned many FSOs in company command posts to provide command and control for ongoing operations. The large majority of our 13F Fire Support Specialists assumed the same missions as their maneuver counterparts, conducting patrols and checkpoint operations throughout the sector.

Two of the deployed TF FSOs assumed duties as information operations cell (IOC)/targeting officers in two of the largest population centers in the sector. Although they did a superb job, the duties severely restricted their abilities to perform as fire supporters and increased the responsibilities of the TF fire support NCOs (FSNCOs) and other targeting officers. The decentralized nature of this operation emphasized employing "maneuver shooters."

At the TF Falcon level, fire support played a unique role in peace support operations. While continuing to conduct standard fire support tasks, such as targeting, employing Firefinder radars and conducting TPS operations, the FA intelligence officer and targeting officers also were key players in TF Falcon IO.

Targeting was unique in that it focused on the local population, ethnic groups and even specific individuals or personalities rather than conventional "hard target" sets. The decide, detect, deliver and assess (D^3A) targeting methodology process still applied, and the FSE targeteers provided expertise to members of the IO targeting team.

Deep operations also were applicable but focused on long-term goals, such as changing a specific ethnic group's views or opinions. Once again, many of the lessons learned from Bosnia were applicable in developing the TTP in targeting operations.

Fire Mission. US forces have participated in peace support operations in the Balkans for more than four years and, with the deployment of 1-7 FA, had not fired an operational artillery fire mission. Regardless, the TF Lightning developed TTP for employing indirect fires and fire support assets in Kosovo.

The result was a "graduated response matrix" (see Figure 2). This matrix tied the employment of fire support assets to an escalating threat. The process was tempered by the KFOR commander's rules of engagement (ROE). The planning timeline exercised to gain approval and clearance of fires from KFOR was no less than 30 minutes.

Before the 2d BCT arrived, US Army and US Marine forces on the ground many times had requested clearance to fire illumination in the MNB-E sector, but the KFOR denied the requests. On

Situation	Threat	Response
Tier One—Observed Looting, Unruly Crowd	Possible	Hand-held Illumination, M203 Illumination
Tier Two—Unaimed, Unobserved Fire	Likely	Request to Fire 60-mm, 81-mm or 120-mm Mortar Illumination
Tier Three—Sniper Fire, Aimed Fire, Sporadic Firefight	Imminent	All of Above; Request for 105-mm or 155-mm Illumination or Smoke
Tier Four—Sustained Firefight/Casualties Involving KFOR	Actual	All of Above; Mortar or Cannon High Explosive (HE)

Figure 2: Graduated Response Matrix for Fire Support in Task Force Falcon in Kosovo

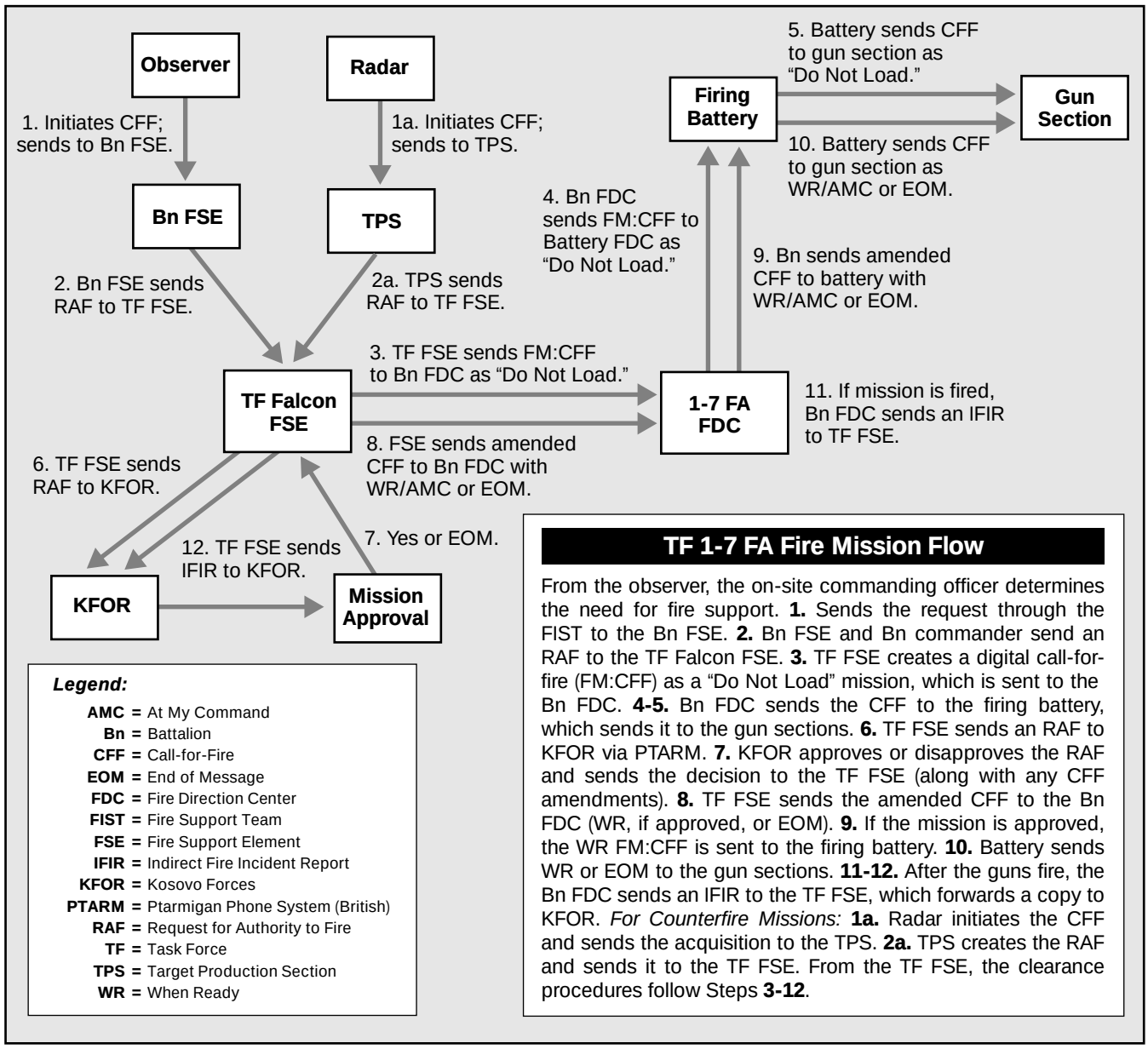

Figure 3: Clearance of Fires Procedures for Task Force Falcon in Kosovo

the night of 30 July, TF Falcon received a report of US soldiers under intense automatic gunfire in the mountainous region north of the city of Gnjilane in the TF 1-26 Infantry's sector. A dismounted infantry team in a remote site reported intense automatic gunfire on its position and that it couldn't extract itself and requested assistance. The belligerents were firing from concealed positions in a secluded wood line and could not be identified.

The TF Falcon commander initially directed the team be extracted by armored vehicles, the closest of which were a TF Lightning Paladin howitzer and FA ammunition support vehicle (FAASV) guarding a Serbian church about six miles away. Meanwhile, a quick reaction force (QRF) was dispatched from Camp Montieth in Gnjilane. A few minutes later, before the Paladin could reach the dismounted team, it reported the enemy had broken contact. But when the QRF arrived, it, then, was taken under automatic gunfire.

At that point, the TF Falcon commander cancelled the Paladin extraction and told the FSCOORD to prepare to fire illumination rounds to "flush" the belligerents out of their positions and help identify their locations. Simultaneously, AH-64 Apache helicopters were dispatched to the area to help locate the source of fires.

A Battery, "Steel Knights" on Camp Montieth on the outskirts of Gnjilane was designated to fire the mission. TF Lightning initiated a fire mission in a "Do Not Load" status while the TF Falcon FSE began the clearance of fires drill both with the KFOR in Pristina and internally to MNB-E (see Figure 3).

Our biggest concern and longest delay was clearing airspace through the Army airspace command and control (A^2C^2) process. The TF cleared indirect fires through both headquarters and had to account for fixed wing, rotary wing and unmanned aerial vehicle (UAV) aircraft operating in the sector. The call-for-fire (CFF) was initiated by the QRF who had "eyes on." Additionally, a Q-36 radar was placed in the "friendly fire mode" to confirm impact predict and track TF rounds.

(Photo by SPC Mike Goranson, 1-7 FA)

LTC James Waring (left), Commander of TF Lightning, and his CSM Carl McPherson confer with Serb Orthodox priests at a Serbian monastery that soldiers from 1-7 FA are guarding north of the city of Gnjilane in Kosovo.

The TF developed a drill that took clearance of fires a step further. The FSE used satellite imagery of the AOR on its automated deep operations coordination system (ADOCS) software and zoomed in on the target area to confirm there were no dwellings or urban areas that might receive collateral damage from illumination canisters or be ignited by an illumination round. The FDC also computed an automatic "up 100" for the illumination to minimize the threat to burnout on the ground or on a dwelling. Furthermore, the TF maintained "eyes on" the target with UAV and AH-64 aircraft. This was a dynamic process as the target location grid and confirmed locations of friendly ground troops and aircraft changed many times in quick succession.

Approximately 45 minutes after the initial reports of contact, A/1-7 FA fired two illumination rounds that were "observed safe, accurate and effective." These were the first US artillery rounds fired in an operational mission in Balkans peace support operations.

The mission met its intent as the belligerents immediately ceased firing and were not heard from again. The rounds were tracked by the Q-37 radar on Camp Bondsteel and observed by the UAV and AH-64 pilots as well as the TF 1-26 Infantrymen on the ground. The effect of the outbound rounds was equally dramatic to the residents of Gnjilane as local nationals scurried to their homes and left the streets deserted.

The TF Falcon psychological operations (PSYOP) teams exploited this mission to publicize the firepower and lethality that TF Falcon could bring to bear. The PSYOP teams issued flyers to locals throughout the area, reassuring peaceful Kosovars and warning potential belligerents. The flyers read, "*This is KFOR artillery!* Last night you witnessed illumination rounds being fired. Will the next rounds be high explosive? Cease your firing on the village immediately or become a KFOR target. Helping Kosovo on the road to peace—KFOR Task Force Falcon."

TF Lightning and 1-7 FA made history again on the 4th of August as the battalion fired two more fire missions, but this time in support of Russian counterparts operating in the northeast portion of the MNB-E sector. This marked the first time since World War II that US artillery had fired in support of Russian forces on an operational mission.

Under circumstances similar to the previous mission, the Russian compound in the city of Kamenica came under sustained automatic gunfire, which resulted in one Russian soldier wounded. Employing their US special operations liaison team, the Russians requested illuminating fires from TF Falcon to identify and flush belligerent forces from positions on the high ground surrounding the compound.

Using lessons learned from the first illumination mission, TF Lightning streamlined its response time to 17 minutes, including clearing fires. Again, A Battery fired at maximum range from Camp Montieth. Again, the fires were accurate and effective and the belligerent firing ceased immediately.

TF Lightning fired two more missions for the Russians the next night under almost identical conditions: two rounds in staggered succession on the first mission and four rounds laterally spread on the subsequent mission. The results were the same.

During Operation Joint Guardian II, TF Lightning validated the role of the FA and fire support in peace support operations as defined in FM 100-23. While also performing unique missions, such as patrolling, perimeter security and such, the US artillery never sacrificed its ability to provide timely and accurate fires in support of maneuver forces. This is a constant challenge as artillery forces are frequently viewed as forces "available" to augment the "boots on the ground" requirements or perform force protection or base camp mayoral duties.

While the tactical situation in each operation is unique, leaders and planners must carefully review and consider the requirements for fire support and artillery. The first rule is the Field Artillery is the absolute King of Battle and you need it. *Duty First!*

Lieutenant Colonel James M. Waring is the Commander of the 1st Battalion, 7th Field Artillery, 1st Infantry Division (Mechanized), *Drumfire* Artillery, in Germany. He commanded the battalion and Task Force Lightning during Operation Joint Guardian II in support of Task Force Falcon in Kosovo. In a previous assignment, he was the Deputy Fire Support Coordinator, also with the 1st Infantry Division. He served as the Division Artillery S3 of 3d the Infantry Division (Mechanized) and as the S3 of the 1st Battalion, 41st Field Artillery, also in the 3d Division at Fort Stewart, Georgia. During Operation Desert Shield, he commanded A Battery, 3d Battalion, 320th Field Artillery, 101st Airborne Division (Air Assault) and during Desert Storm, served as Assistant S3 of the same battalion.

Major C. Phillip Royce is the S3 of the 1st Battalion, 7th Field Artillery, 1st Infantry Division in Germany. He deployed to Kosovo as part of Operation Joint Guardian II where he assumed the duties of S3 for Task Force Lightning. His previous assignments include serving as the Assistant Fire Support Coordinator for the 1st Infantry Division; Observer/Controller (O/C) for the Battle Command Training Program (BCTP) at Fort Leavenworth, Kansas; as well as an O/C for the FA Werewolf Team at the National Training Center, Fort Irwin, California. During Operation Desert Storm, he commanded C Battery, 4th Battalion, 5th Field Artillery, part of the 1st Infantry Division.

Combined Arms Commander's Guidance for Fires

Several articles and publications have discussed what information the commander should provide his fire support coordinator (FSCOORD) or fire support officer (FSO) as he articulates his "commander's guidance for fires" early in the military decision-making process (MDMP). This article discusses what the commander provides and how his FSCOORD/FSO helps him with his guidance.

Guidance for Fires. No common format for the commander's guidance for fires exists in current doctrine. *Field Manual (FM) 101-5 Organization and Operations*, Appendix B, has a long list of topics for the commander to discuss but lacks focus. *FM 6-71 Tactics, Techniques and Procedures [TTP] for Fire Support for the Combined Arms Commander* (1994) covers formulating the commander's guidance and provides some answers to the problem. However, it doesn't help the commander transition from formulating to articulating the guidance.

The figure recommends the commander's checklist to articulate his guidance for fires. The checklist ensures the commander will be clear and concise and gives the information the fire supporter needs to focus his fires-the task, purpose, method and effects methodology for his essential fire support tasks (EFSTs). If, at a minimum, the commander covers the key areas shown in the figure, he will convey to his staff and subordinate commanders how he wants fires to support maneuver. The following is an example of commander's guidance for movement-to-contact.

"*Movement-to-Contact EFSTs.* Fires accomplish three EFSTs for the TF [infantry battalion task force]: use FA to suppress the enemy's FSE [fire support element] to allow the infantry advanced guard company to destroy the FSE and fix the AGMB [enemy's advanced guard main body], use FA to disrupt the enemy's main body to allow the TF to destroy it and use mortars to suppress the enemy's flank security element to allow the TF freedom of maneuver.

"*Focus for Fires.* Phase 1 focuses on the scouts and COLTs [combat observation lasing teams] until the advanced guard company makes contact. Then as Phase 2 begins, the focus shifts to the advanced guard company as it destroys the FSE. In Phase 3, the focus is on the main effort company as it destroys the enemy main body.

- *Essential Fire Support Tasks (EFSTs).* What fire support is to accomplish, providing task and purpose at a minimum.
- *Focus for Fires.* Focus by phases of the battle and linked to specific events.
- *Targets.* The type of target to be engaged and the desired effect on each.
- *Force Protection Priorities.* The priorities for protecting friendly forces and for counterfire.
- *Restrictions and Priorities for Special Munitions.* Including dual-purpose improved conventional munitions (DPICM), smoke, family of scatterable mines (FASCAM), Copperhead, etc.
- *Special Fire Support Concerns.* Such as employment of fire support coordinating measures (FSCM), positioning and movement of mortars, positioning of combat observation lasing teams (COLTs) or fire support teams (FISTs), etc.

Information Provided in the Commander's Guidance for Fires

"*High-Payoff Targets (HPTs).* Phase 1: tanks in the brigade reconnaissance and GSRs [ground surveillance radars]. If DRTs [division reconnaissance teams] are found, destroy them with HE [high-explosive fires]. Phase 2: 2S1 [howitzers] with AGMB, followed by C^2 [command and control] BRDMs [wheeled armored reconnaissance vehicles]. Phase 3: AT-5s [air defense] on flank security followed by C^2 vehicles.

"*Force Protection Priorities.* The advanced guard company, mortars and then the main effort company are the priorities. Be sure the FA battalion knows where friendly mortars are at all times.

"*Restrictions/Special Concerns*. Use smoke to screen movements. Ensure there are accurate NFAs [no-fire areas] over the scouts at all times. Use an RFL [restricted fire line] between the advanced guard company and the main body to prevent fratricide from direct and indirect fires during the transition. Keep the CFL [coordinated fire line] as close to the advanced guard company as possible. Conduct drill rehearsals to ensure the advanced guard company commander can clear the fires in front of him as quickly as possible. Give the advanced guard company an additional FIST [fire support team] as it moves toward the enemy. To ensure timely support, mortars should move behind and as part of the advanced guard company."

The commander's guidance checklist should be published in *FM 6-20-20 TTP for Fire Support at Battalion Task Force and Below; FM 6-20-40 TTP for Fire Support for Brigade Operation, FM 71-123 TTP for Combined Arms Heavy Forces: Armored Brigade, Battalion/Task Force and Company/Team* and other manuals.

FM 6-71 currently being rewritten should include not only the checklist, but also examples of the commander's guidance for fires in various tactical scenarios, such as the one for movement-to-contact and others: offense, defense, military operations in urban terrain (MOUT), etc. Each example scenario would provide a baseline from which a commander could begin to tailor his guidance to fit his unit's situation.

The commander's guidance for fires also should be taught in all pre-command courses.

FSCOORD/FSO-Commander Relationship. Equally important is the relationship between the FSCOORD/FSO and the maneuver commander. Whether at the brigade or the task force, the FSCOORD/FSO is responsible for enabling the commander to synchronize fires with maneuver. The FSCOORD/FSO translates the guidance into EFSTs. As the most experienced fire supporter on the staff, he advises the commander and his staff not only on the means to employ fire support, but also on what fires can accomplish. Essentially, the commander taps the expertise of his FSCOORD/FSO to get the "what," "where," "when" and "why" of his fire support guidance, and the FSCOORD/FSO comes back with the "how" in the fire support plan and then actively manages the execution of the plan.

The commander's guidance for fires is key to the successful integration of fires into the maneuver plan. The commander must use his FSCOORD's/FSO's expertise and articulate clear, concise guidance to ensure fires are effective in his combined arms operations.

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3x6 Divisional MLRS Battalion
Capabilities and Constraints

by Major Burke A. Tarble and Captain Shawn P. Reese

In June 1999, 2d Battalion, 20th Field Artillery (2-20 FA) officially stood up at Fort Hood, Texas, as the 4th Infantry Division (Mechanized) multiple-launch rocket system (MLRS) battalion using a 3x6 table of organization and equipment (TOE). This article is based on a white paper written for the 4th Division commanders and staff planners that examined lessons learned from a FireStrike Exercise conducted in September 1999; the exercise provided integrated division artillery (Div Arty)-level digital simulation training for 2-20 FA and was the battalion's first field exercise.

Based on lessons learned in FireStrike, this article addresses the capabilities and limitations of the 3x6 divisional MLRS battalion to shoot at sustained and surge rates, to shoot multiple munitions, to absorb casualties and, finally, to serve as MLRS direct support (DS) to an aviation brigade. The information is intended to help planners and employers of 2-20 FA and other divisional MLRS battalions to train and fight their battalions more effectively.

3x6 Sustainment and Surge Rates. The Div Arty is concerned with providing the division commander timely and accurate fires, both close and deep. The reintroduction of an MLRS battalion into each heavy division is a welcome addition of firepower. However, the new 3x6 structure of the battalion is truly a *lean* organization. It's tempting to look at the MLRS battalion as a mirror of one of the division's gun battalions in terms of sustainability for combat operations, but that would be a mistake.

The 3x9 MLRS battalion structure had 27 launchers, masking the thinness of manning for the MLRS launcher crews and platoon operations centers (POCs). Now that there are only 18 launchers in the battalion, "fighter management" of the organization becomes a critical piece for the commander and his staff.

With only three men operating the launcher and three men controlling the POC, internal platoon or even battery sleep and maintenance plans are nearly impossible. Crew and POC rest must be managed at the battalion level. For planning purposes, an MLRS battalion has to have one-third of its crews in a down

status at any time to perform maintenance on their equipment and rest.

With one-third of the launchers and POCs down and a field operational readiness rate (O/R) of 80 percent for the battalion, this only leaves nine launchers to fire missions on a continual basis. (The O/R is based on 2-20 FA's historical data.) This equates to the loss of a battery's worth of firepower in the old 3x9 structure.

Launcher reload times plus move times to and from the hide, ammunition reload and firing points takes approximately 20 minutes. This means the nine launchers realistically could shoot a maximum of 108 rockets every 20 minutes or 324 rockets per hour. With a standard fire order of 48 rockets per counterfire target, the battalion only can shoot a maximum of six missions per hour on a sustained basis.

Given three hours' notice, the battalion could surge all its 14 launchers (using an O/R rate of 80 percent) for a short period of time and shoot 168 rockets every 20 minutes or 504 rockets an hour. This is 10 missions per hour.

Obviously in a heavy counterfire fight, more than 10 targets per hour will avail themselves. Because 2-20 FA can't fire more than 10 missions per hour, it would be advisable to change the standard fire order (unless reinforcing MLRS units are available).

Also consider that 48 rockets equals 30,912 M77 bomblets. Currently, the Div Arty is sending down point targets from acquisitions. The fire direction system (FDS), advanced Field Artillery tactical data system (AFATDS) or the launcher do not automatically compute any type of open sheaf. This means that more than 30,000 bomblets are dropped on an area the size of a football field. Without choosing multiple aim points based on multiple acquisitions or observations, we're putting a lot of bomblets on top of one another.

It's true that to achieve devastating results a high volume of fire is necessary. However, to get the results we all desire, the artillery community needs to come up with an MLRS "sheaf" or start using multiple targets.

The other constraining factor for high-volume fires is the battalion's ability to haul ammunition. Unlike tube units, MLRS rockets are extremely bulky and cube out the battalion's haul capacity long before the rockets weigh it out.

The battalion has 36 heavy expanded-mobility tactical trucks (HEMTTs) and 36 heavy expanded-mobility ammunition trailers (HEMATs) that carry four pods each for a total upload of 1,728 rockets. Firing a surge rate of 504 rockets an hour would expend the battalion's entire unit basic load (UBL) in little more than three hours. Without considerable caching of ammunition, this rate-of-fire would be impossible to sustain beyond a few hours.

The bottom line is that a 48-rocket fire order in a high-intensity conflict would be very hard, if not impossible, to sustain. A 3x6 battalion only can sustain 324 rockets an hour for extended periods and can surge to 504 rockets an hour if given three hours' lead time.

Special Munitions. The Army only has a limited inventory of extended-range (ER) rockets. In a high-intensity conflict such as might be fought on the Korean peninsula, these stocks are likely to be depleted or severely limited by the time most continental US (CONUS)-based units would arrive in theater.

Given that information, we shouldn't plan on having an MLRS range capability of more than 32 kilometers, except in very rare cases. Nonetheless, the Div Arty needs to consider tactics, techniques and procedures (TTPs) for using 2-20 FA when these and other special munitions come available in quantity.

Although some would like to believe that shooting other than standard rockets with MLRS is no different than selecting a different shell/fuse combination to be fired by a gun, the fact is that time-space factors are not the same. Unlike a gun, the MLRS launcher has no internal ammunition haul capability other than what's loaded in its launcher loader module (LLM). The launcher can't quickly retrieve ammunition directly off an organic ammunition vehicle. What this means is if the ammunition the launcher wants to fire isn't already in the LLM, the launcher needs considerable time to reload. And, prior planning must have ensured the ammunition is in a proper disposition to facilitate an upload.

Standard reload time from ammunition already on the ground near the firing position is 20 minutes. If the ammo is not already on the ground, this process can take an hour or more, significantly longer than the minute it takes to select a different shell/fuse combination for Paladin.

Planners, fire support officers (FSOs) and fire control officers (FCOs) must take into account constraints when considering using other than standard M26 rockets. TTP that could be used to overcome some of these time delays is to designate a platoon or certain launchers as the ER/special munitions firing units. This option has the advantage of being able to shoot the munitions immediately without worrying about upload times and what ammunition is on the ground.

This approach, however, limits the battalion's ability to use all firing elements to engage standard targets within normal range. Another drawback of this technique is that it requires positioning guidance that foretells where special munitions will be needed. It also further reduces the haul capacity of the battalion to move standard rocket pods.

Absorbing Casualties. The relative thinness of the 3x6 organization is most apparent in its inability to absorb casu-

Standard reload time from ammunition already on the ground near the firing position is 20 minutes. If the ammo is not already on the ground, this process can take an hour or more, significantly longer than the minute it takes to select a different shell/fuse combination for Paladin.

alties. Based on self-evacuation, a battery can take no more than six litter casualties before its organic lift assets are exhausted. Sustaining more casualties than this renders the battery combat ineffective for at least six to 12 hours while the evacuation is conducted and reorganization takes place. Additional battalion assets also would have to be tapped to help the battery evacuate casualties and reorganize.

What makes every casualty so critical is the lack of depth in the batteries and the battalion as a whole. Every soldier in an MLRS battalion is mission-critical. When the battalion loses one ammo specialist, his truck and the 48 rockets it hauls are out of action.

A self-propelled launcher-loader (SPLL) shouldn't operate with less than two of the three crew members—and even then, operations with two crew members calls for more time-consuming procedures to protect the safety of the reduced crew and should be implemented in emergencies only. When the SPLL gets down to two crew members, it also becomes less sustainable from a maintenance and crew-rest perspective. These effects quickly compound in a mass casualty event.

Obviously, force protection is critical to such a brittle unit with no inherent force protection capacity of its own. Internally, the battalion must be able to react to mass casualty events by evacuating quickly and reorganizing units to return its firepower to the division as soon as possible.

MLRS DS to Aviation. New aviation technology and tactics have propelled the MLRS battalion into a role not originally considered appropriate for rocket artillery: DS to the aviation brigade. This new role has not, however, relieved the divisional MLRS battalion of its general support (GS) responsibilities to the division. MLRS in the counterfire role is still too vital for the division to allow the battalion to be DS to the aviation brigade in the traditional sense.

As an interim fix to this conundrum, Div Arty planners have come up with the non-doctrinal artillery support relationship of "DS**." The DS** is defined as DS to the brigade with position authority held by Div Arty (* number one) and fire missions generated at the Div Arty having priority over aviation brigade missions (* number two). This relationship worked relatively well in the controlled environment of a Corps Battle Simulation (CBS). It didn't work so well when units were in the field with helicopters in the air.

The positioning asterisk is problematic in that the unit supported normally controls the positioning of a DS unit. In this case, that would be the 4th Brigade. The rationale behind this is that no one knows the fire support requirements of the brigade better than the brigade does. The brigade is, therefore, best suited to decide where to position its supporting artillery for current and future operations.

With the Div Arty planning the positioning of a DS unit, the opportunity for "de-synchronization" between the Div Arty and 4th Brigade is ever present. Although this problem didn't occur on the confined spaces of the Fort Hood Training Area, it could easily become an issue in the expanded battlespace of the division in combat.

The second asterisk essentially gives the Div Arty priority of fires. This is inherently contradictory to the definition of DS. During FireStrike, 2-20 FA regularly received missions simultaneously from the division and the 4th Brigade. AFATDS, using the Div Arty's DS attack guidance, as often as not shot 4th Brigade's missions before it shot the Div Arty's. This put the onus on the battalion fire direction officer (FDO) to discern target origination by stopping every mission for analysis—which defeats the purpose of digitization.

With conflicting priorities in the division—counterfire and suppression of enemy air defenses (SEAD)—an honest broker has to be established. Traditionally, that has been the division fire support element (FSE). With DS**, we are abrogating that decision-making process down to the battalion. The battalion neither has the resources nor the division perspective to make such decisions. Two alternate courses of action (COAs) may solve this dilemma.

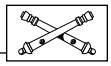
First, the division assigns the MLRS battalion DS to the aviation brigade for all deep operations starting at H-2 (or thereabouts) to give the battalion time to do a live rehearsal with the brigade without outside interference. As soon as the exfiltration is complete, the battalion returns GS to the division.

Second, the division determines the minimum requirement for support of the counterfire fight and SEAD missions and assigns one or two batteries DS (pure, no asterisks) to the 4th Brigade with the rest of the battalion GS to the division. Fire missions from the 4th Brigade and Div Arty still would flow through the battalion fire direction center (FDC), but they only would be assigned to the respective DS or GS batteries.

In the end, it isn't that rocket artillery can't serve in the DS role, but more simply that we, as a division, can't afford to allow 2-20 FA to conduct a true DS mission. DS** has yet to be proven as a workable solution to providing the division and 4th Brigade the rocket fires both demand. If it's to become workable, the Div Arty and 4th Brigade FSEs will have to develop TTP that address the issues causing the friction at the shooter level.

Just because we call a mission "DS" doesn't mean the problem is solved. SEAD programs for ingress and egress are important to the division. Counterfire is also important to the division. Finding a compromise that affords both target sets the servicing they deserve is a tough problem, but not an unsolvable one. The two COAs discussed may not be the answer but, hopefully, will serve as a starting point to find a solution.

The divisional MLRS battalion is a super asset, but the 3x6 structure is still new and needs to be looked at and field-tested to see its impact on the roles we want the battalion to fill. TTPs to maximize the potential of this organization must be tested in realistic, scenario-driven, field training exercises and adjusted and refined today for tomorrow's combat.



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Report to the Field

Tactical/Operational Fire Support Conference

by Brigadier General William F. Engel,
Colonel R. Mark Blum and
Major Rafael Torres, Jr.

In a bold move, the Chief of Field Artillery convened the first Tactical/Operational Fire Support Conference at the Field Artillery School, Fort Sill, Oklahoma, for three days in January. Major General Toney Stricklin brought together maneuver commanders and their command sergeants major (CSMs) from the army, corps, division and brigade levels plus FA senior commanders and their CSMs to solve FA and fire support problems for the maneuver commander. Attendees came from both the Active and Reserve Components (AC and RC) and included fire support observer/controllers (O/Cs) from the Combat Training Centers (CTCs), among others.

The mission: Attendees were to recommend solutions for a series of fire support problems that indicate the FA has lost its focus on supporting the maneuver commander—notably, in the close fight. The problems were identified by the field and in the article "Is the FA Walking Away from the Close Fight?" by the Chief of Infantry, Major General Carl F. Ernst (September-October 1999). In addition, since assuming command in August 1999, the Chief of FA has researched issues with both branch and maneuver leaders, traveling extensively to units around the world.

The original list of issues identified included ongoing CTC negative trends and new problems—some perceived as opposed to actual. We scrubbed the list of issues and put them into categories. First were those problems that call for long-term work and must be resolved at levels above the branch. Next, problems were listed for the FA to solve: those we can solve immediately without outside input (i.e., the role of the fire support NCO in the military decision-making process) and those we must work in the longer term. The remaining problems were identified for conference attendees to brainstorm solutions.

The conference attendees were directed to discuss the problems and come up with solutions that, if implemented, would result in significant improvements for fire support for the maneuver commander. This article reports on six of the problems discussed at the conference that we can move on immediately and a series of fire support initiatives in the FA School to "adjust fire" as we transition into the 21st century.

FA Training Aids, Devices, Simulators and Simulations (TADSS). Coordinating and integrating the combined arms fight on the modern battlefield is extremely difficult, calling for perishable skills that must be honed in home-station training and at the CTCs. The Army, led by the FA School, must aggressively pursue improving the replication of fires and fire support in TADSS to more effectively train the combined arms fight.

The Army's close combat tactical trainer (CCTT) is an excellent system that trains crews up through the battalion level in manned simulators that replicate a realistic force-on-force, free-play virtual battlefield. The FA School is working with the Simulations, Training and Instrumentation Command (STRICOM) to improve fire support replication in the Army's CCTT and use it as a fire support trainer for the entire maneuver brigade fire support team. We are coordinating to fix fires and effects in the CCTT software and to design re-configurable kits for Bradley fire support team vehicles (BFISTs) and combat observation lasing team (COLT) Strikers at the CCTT sites. (Striker is a high-mobility multipurpose wheeled vehicle, or HMMWV, modified for COLT operations.) The goal is to fully replicate fire support in home-station combined arms training on the virtual battlefield.

Live training at our CTCs remains the most realistic collective training our soldiers and leaders experience, and our CTC O/Cs are outstanding coaches and mentors. But one aspect of training at the dirt CTCs that needs improvement is replicating the effects of artillery and mortar fires.

Many senior leaders are concerned that we aren't training our maneuver commander to employ fires properly and that the commanders are leaving the CTCs with the impression that fires can't support combined arms operations. More realistic replication of the effects of indirect fires at the dirt CTCs will help develop maneuver commanders' abilities to fight more effectively on tomorrow's battlefield and give them confidence in their fire support.

The current simulated area weapons effects-multiple integrated laser engage-

ment system (SAWE-MILES II) doesn't accurately replicate our weapons' signature on the battlefield or the destructive and suppressive effects of our munitions. The introduction of new smart munitions is compounding this problem.

It is extremely costly to modify the software in every SAWE-MILES II device in the system at the dirt CTCs to implement fire support replication changes. But standing up the new BCT is giving us the opportunity to correct many indirect fires replication problems. To reflect the survivability and lethality data for the new BCT systems, the SAWE-MILES II software and the system's devices must be modified. We are working with the Training and Doctrine Command (TRADOC) and STRICOM to take advantage of the requirement for BCT modifications by simultaneously incorporating changes for every BOS to accurately replicate new vehicles, weapons and ammunition. The SAWE-MILES II modifications are a high priority at TRADOC and must be completed before the first Initial BCT rotation at the JRTC in December 2001.

In addition, our constructive models and simulations—such as the Corps Battle Simulation (CBS) used in the Battle Command Training Program (BCTP) at Fort Leavenworth, Kansas, or Janus—are not providing the degree of resolution in replicating fires and effects that we need to train our battle staffs and fire supporters effectively. Efforts are underway to methodically validate fires and effects replications in various simulations in use today.

A parallel effort at Fort Sill is the design and development of future simulations, such as the One Semi-Automated Force (OneSAF) and Warfighter Simulation 2000 (WARSIM 2000). The plan is to establish good fires and effects replication in these simulations now, during the design phase, rather than trying to repair inadequate fires replication later.

Training is key to our success on the combined arms battlefield. We must accurately replicate the effects of indirect fires in all training environments and provide the training devices and simulations for realistic, quality home-station training.

Lightweight Target Location Device. Failure to provide accurate target location, the first element of accurate predicted fire, is the reason most often cited by O/Cs for poor fires effects in the close fight. Target location is also a weakness in the fire support reconnaissance and surveillance plan (R&S).

Our current ground/vehicular laser locator designator (G/VLLD) has proven to be inadequate for the task. It is too heavy (weighs 110 pounds) and too cumbersome for dismounted operations by our observers—COLTs and FISTs. Also, the G/VLLD's dismounted power source has a short battery life and the system has no self-location capability.

The field and conference attendees recommended the FA get a lightweight, laser-rangefinder that can be coupled with a global positioning system (GPS) capability to accurately locate targets. They agreed that solving this problem was our priority.

The lightweight laser designator rangefinder (LLDR) will weigh 35 pounds, including a day sight with ranges out to 10 kilometers, a thermal night sight with ranges out to two kilometers, a laser rangefinder, laser designator and tripod. *(Photo Courtsey of Litton Laser Systems)*

The lightweight laser designator rangefinder (LLDR) under development to replace the G/VLLD will weigh 35 pounds, including a day sight with ranges out to 10 kilometers, a thermal night sight with ranges out to two kilometers, a laser rangefinder, laser designator and tripod. The system will significantly enhance target location.

However, AC units don't start fielding the LLDR until the first quarter of FY04 and field through FY09, while National Guard units will be fielded LLDR from FY09 to FY14. In the meantime, to answer the field commanders' request for a lightweight target location device *now*, we need an interim solution.

One option is to buy an off-the-shelf device that is lightweight and accurate with a power supply common to other systems in the inventory. The 3d Battalion, 75th Ranger Regiment at Fort Benning, Georgia, has been using Viper, a commercial binocular laser rangefinder, with excellent results. In addition, the 82d Airborne Division Artillery at Fort Bragg, North Carolina, and 101st Airborne Division (Air Assault) Artillery at Fort Campbell, Kentucky, each have four. Although Viper is not the only interim device that will be tested and considered, it is one off-the-shelf device already in use by several Army units.

The contractor specifications state Viper will determine range to target up to four kilometers. (At this time, Viper has not been tested based on Army specs.) The carry-weight of the system is 8.9 pounds, including 3.8 pounds for the binoculars plus its 10-power extender, tripod and the Viper carrying case. This lightweight device will reduce the load of our dismounted observers as they maneuver across rough terrain to position themselves in support of maneuver commanders.

The FA School is getting 24 Vipers for fire support focused rotations at the CTCs and fielding to the Army's new brigade combat team (BCT) being stood up at Fort Lewis, Washington. The focused rotations are designed to help reverse ongoing negative trends at the CTCs and to gather data for resolving other challenges.

The FA School will support the August-September digitized division rotation at the National Training Center

(NTC), Fort Irwin, California, with the 4th Infantry Division (Mechanized); that rotation actually is a focused rotation for the Engineer School (combined arms breaching); our subject matter experts will gather fire support data during the rotation. In September, the FA School will support the Joint Contingency Force/Advanced Warfighting Experiment (JCF/AWE) with the 10th Mountain Division (Light Infantry) at the Joint Readiness Training Center (JRTC), Fort Polk, Louisiana. The truly fire support focused rotations will be in April 2001 at the JRTC with the 2d Brigade, 10th Mountain Division out of Fort Drum, New York, and in June 2001 at the NTC with the 2d Brigade, 3d Infantry Division (Mechanized) out of Fort Stewart, Georgia.

Viper, a Commercial Binocular Laser Rangefinder *(Photo Courtsey of Leica)*

In June of this year, the initial eight Vipers will be distributed. Two Vipers will go to the schoolhouse for training at Fort Sill, two to the Initial BCT and four to the 10th Mountain Division Artillery (Div Arty), the latter to use in its JCF/AWE.

The FA School is buying an additional 14 Vipers, some of which will be distributed to the 4th Div Arty out of Fort Hood, Texas, for its Division Capstone Exercise (DCX) in March-April 2001 at the NTC. Detailed feedback from the 10th and 4th Div Artys will help determine if this system, or one similar to it, can offset the lack of LLDRs until FY04.

Brigade FSO as Branch Qualifying. The issue of the brigade fire support officer (FSO) position as branch-qualifying for majors received considerable attention during the conference. The FA's job is not only to deliver accurate, timely and effective cannon, rocket and missile fires, but also to integrate all fire support into the combined arms fight. It was thought that if the FA is about supporting the combined arms fight, we should "put our money where our mouth is" and reinstate the position of brigade FSO as branch qualifying for majors. We also should ensure our brightest and most experienced majors fill those positions.

The FA has long maintained that brigade FSO is the toughest position for a major, but too many Department of the Army boards haven't recognized the brigade FSO as equal to the major's jobs of battalion S3 or executive officer (XO) when it came time to select battalion commanders. As a result, the brigade FSO position was eliminated from the branch-qualifying list two years ago.

The Chief of FA has taken the first steps to reinstate the position as branch qualifying for majors and renew our commitment to ensuring that top-quality majors do one of the toughest jobs for maneuver—and *get credit* for it.

The new Officer Personnel Management System (OPMS) XXI increases the stability and length of time served in operational units for both captains and majors. This makes serving as brigade FSO and an additional branch-qualifying job entirely possible for majors. Scheduled to be fully implemented in FY02, OPMS XXI specifies that majors in the Operations Career Field (operational units) will serve a minimum of 24 months (up to 36 months) in branch-qualifying or key developmental positions. Beginning with Year Group 86, FA majors will have to serve at least 24 months in troop assignments to be branch-qualified. An FA major will be able to serve, for example, one year as a battalion S3 or XO and one as a brigade FSO. He may be able to serve in all three positions, given 36 months in his operational unit.

Div Arty commanders at the conference recognized that the burden of placing top-quality, experienced officers in brigade FSO positions falls to them. It naturally follows that those majors would be selected for promotion and command at an increased rate. If we, as a branch, are going to have qualified, experienced fire support coordinators (FSCOORDs) as battalion commanders, then we must place the most competitive officers in positions where they can gain the required fire support experience.

The Field Artillery Proponency Office (FAPO) in the FA School, in conjunction with the Total Army Personnel Command (PERSCOM), Alexandria, Virginia, is revising *DA Pamphlet 600-3 Commissioned Officer Development and Career Management* to designate brigade FSO as a branch-qualifying position. This policy will enhance the image of brigade FSOs significantly throughout the fire support and maneuver communities as well as increase the emphasis on the quality of fire support the FA is providing the maneuver commander. The revisions should be implemented in FY01 and will require the active support of every division and Div Arty commander to make it work. The Chief of FA is engaging the Deputy Chief of Staff for Personnel at the Pentagon to help him implement the change and provide the revisions to selection boards.

Although the current discussion is about the brigade FSO position, in fact, the Chief of FA is emphasizing all FSO positions. The expectation is that officers will serve in FA positions at the battery and battalion levels before being assigned to the critical company, battalion or brigade FSO positions. For example, ideally, an officer will serve as a company FSO as a first lieutenant and battalion FSO after experience as a battery commander, fire direction officer (FDO) or assistant FSCOORD. The objective is to place our most experienced officers in these key fire support positions. We will adjust our officer assignment patterns to provide all officers the opportunity to serve in direct support units during their company-grade years of service.

Dedicated BFISTs for Brigade FSCOORDs and Task Force FSOs. Another long-standing issue addressed at the conference was the necessity for a dedicated, armored vehicle for every brigade FSCOORD and task force (TF) FSO in the heavy force. The FSCOORDs and TF FSOs need agility and survivability equal to the highly mobile, mechanized units they support and the communications capability to provide effective fire support. Overall, the conference attendees recommended we use BFISTs for these dedicated vehicles.

The BFISTs will provide crew safety, enhanced situational awareness and dedicated communication assets, includ-

Overall, the conference attendees recommended we use BFISTs for dedicated FSCOORD and TF FSO vehicles. *(Photo of 1-41 FA, 3d ID (Mech), Fort Stewart, GA, by SFC Gerald Mitchell)*

ing a digital capability with either the advanced Field Artillery tactical data system (AFATDS) or the initial fire support automated system (IFSAS). The vehicles would enhance the survivability of the brigade FSCOORDs and TF FSOs and their abilities to plan and execute the fire support plan.

The total requirement to equip heavy brigade FSCOORDs and TF FSOs with BFISTs is 139 vehicles: 66 for AC units, three for the NTC and 70 for National Guard units. Beginning in FY06, M7 BFISTs cascading from A3 BFIST fieldings will allow us to field M7 BFISTs to the AC heavy brigade FSCOORDs as dedicated fire support vehicles.

However, M7 quantities will not allow heavy force TF FSOs to have BFISTs without causing vehicle shortages in other divisional units. Maneuver units should consider giving their TF FSOs standard M2 Bradleys from their existing fleets to allow their FSOs to keep up with their commanders and provide synchronized fires.

The National Guard Bureau also is considering procuring BFISTs for their heavy brigade FSCOORDs, TF FSOs and FISTs.

AFATDS Training/Interface Issues. AFATDS was another subject of discussion at the conference. Fire supporters and maneuver commanders at all levels are concerned about the amount of sustainment training required to maintain digital proficiency with AFATDS—eight hours recommended per unit per week. Additionally, vertical interface is an issue; currently, AFATDS cannot be subordinate to IFSAS or other legacy systems. (See the article "Digital Interoperability Between AFATDS and IFSAS" by Major Michael A. Ascura in the January-February 2000 edition.)

When AC units are fully fielded AFATDS in 2004, many of the digital fire direction problems in small-scale contingencies will be resolved. The RC FA will be fielded in 2007, making the interface issue moot.

The schoolhouse is increasing AFATDS training in courses for officers and NCOs. But for AFATDS to be successful, units must rediscover the old "TACFIRE Park" commitment to weekly home-station training. *(Photo by Kevin Tucker, Fort Sill TSC)*

Another issue conference attendees discussed was how difficult AFATDS was to use, relative to commercial systems. The TRADOC System Manager (TSM)-FATDS is in the process of making AFATDS more user-friendly by reducing the number of screens and procedural steps for mission planning and processing and making the system faster.

However, AFATDS training and leader development in the schoolhouse and home station will remain critical. As we field AFATDS to the force, sustainment training and additional institutional instruction are key to reinforcing the instruction given after the new equipment training team (NETT) has left the unit.

The AFATDS training strategy has been revised to reflect the needs of the force. Beginning with FA Officer Basic Course (FAOBC) Class 3-00, all FAOBC students will receive familiarization training on AFATDS. In FY02, AFATDS instruction in FAOBC classes will expand to four weeks.

FA Captains Career Course (FACCC) Class 4-00 will be the first to receive two weeks of intensive AFATDS training, starting in June. In FY02 captains in FACCC with follow-on assignments to AFATDS-equipped units will receive an additional week of instruction on the new functionality of embedded technical fire direction.

For the enlisted courses, the major addition is the creation of the new Military Occupational Specialty (MOS) 13D Fire Support Specialist that has seven weeks of advanced individual training (AIT). This course begins in the first quarter of FY01 and includes a block of manual gunnery instruction in addition to AFATDS functionality. AFATDS instruction for NCOs is scheduled to start in FY02 in the basic NCO course (BNCOC) and the advanced NCO course (ANCOC).

Educating the entire force is critical for the success of AFATDS. Distance learning technologies are promising tools to train portions of the force on AFATDS, especially software upgrades. The FA School's Warfighting Integration and Develop-

ment Directorate (WIDD) is working toward that goal.

Still, commanders at the conference agreed that for AFATDS to be successful, units had to rediscover the old "TACFIRE Park" (tactical fire direction system) commitment for digital sustainment training—weekly home-station training in a permanent "park" designed to support digital communications.

Doctrinal and Organizational Shortfalls for Operational Fires. This was another area discussed during the conference that required immediate attention. The Army War College, Carlisle Barracks, Pennsylvania, is leading the rewriting of *Field Manual 100-7 Decisive Force: The Army in Theater Operations.* The FA School is supporting the War College by addressing doctrine and organizations for fire support at the theater level and echelons above corps (EAC).

As validated by the field representatives at the conference, current doctrine doesn't codify theater fires requirements and organizations. The FA School's intent is to establish the doctrine and organizations to reflect effects-based fires for joint task force (JTF), joint force land component (JFLCC) and army force (ARFOR) operations. The effects-based fires approach focuses on the integration and synchronization of lethal and nonlethal effects to produce the desired results, including effects gained in information operations.

The goal is to codify the effects-based approach in doctrine that will become the basis for organizing, developing and resourcing the appropriate fires elements at the theater and EAC levels.

Ongoing FA School Fire Support Initiatives. CTC trends reversal was a major issue during the conference. The same negative fire support trends observed 10 years ago at our CTCs still are being observed today at the CTCs.

The Combined Arms Command (CAC), Fort Leavenworth, Kansas, is developing programs to improve negative trends in all battlefield operating systems (BOS), including the fire support BOS. The FA School is working with CAC on a number of initiatives to reverse negative fire support trends as well as analyzing systemic fire support issues in doctrine, leader training and current and future equipment fielding. The FA School is committed to being part of the solution for trends reversal, not just part of a team that documents shortcomings.

The Fire Support and Combined Arms Operations Department (FSCAOD) at the FA School has the lead for defining corrective actions and initiating programs to reverse these negative fire support trends. Currently, FSCAOD is organizing mobile training teams (MTTs) to support units participating in focused rotations during their CTC train-ups. The teams will provide any and all assistance a unit requests.

Additionally, FSCAOD has developed a handbook of TTPs for TF FSOs to be released by June 2000. The tenets in FSCAOD's white paper "Fire Support for the Brigade and Below" have been incorporated into manuals currently being revised, and WIDD is working to integrate them into appropriate maneuver manuals.

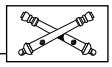
The FA School also is working to help maneuver commanders train brigade targeting teams as part of home-station training via a new organization training team (NOTT). The NOTT includes a targeting warrant officer to train the BCT staff on targeting techniques.

The FA School also has retooled the pre-command course (PCC) to give the course greater tactical focus. First, the FSCOORD's role as the integral part of the maneuver brigade staff and his relationship with the maneuver commander are covered in more detail. Also, TTPs for synchronizing fires are discussed at length in a seminar format. Additionally, the PCC is part of the trends reversal process by educating future commanders on the negative trends at the CTCs. Finally, we continue to train future commanders in detail on planning and executing fires. The intent is to give FSCOORDs the tactical competence needed to confidently advise maneuver brigade commanders on fire support and train subordinate FSOs.

Conclusion. Major General Stricklin convened January's Tactical/Operational Fire Support Conference and asked participants to "roll up their sleeves" and work to resolve important fire support issues. Providing fire support for the maneuver commander is the only reason the FA exists. Tangible solutions to these problems are already in motion, and we'll aggressively tackle any obstacles to their implementation.

As important as this conference was, it does not take the place of the Senior Fire Support Conference held at the FA School every 18 months. The next Senior Fire Support Conference is scheduled for 23 to 27 June 2001.

The FA has not walked away from the close fight or any other fight. We do, however, have some fire support "infrastructure" work to do. We must spend the time and resources to ensure the doctrine, organizations, leaders, trained personnel, procedures and equipment are in place to put fires where the maneuver commander needs them—on time, on target, every time. *Fire Support—King of Battle!*



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The Company FSO TLP and Briefing

Making Fires Happen in the Close Fight

by Major Terry A. Ivester

Officers briefing their fire support plan. (Photo by 2LT Larry Cunningham, C/2-80 FA)

In recent months, the fire support community updated its doctrine through the publication of a white paper "Fire Support Planning for the Brigade and Below." The publication addresses the military decision-making process (MDMP) as it pertains to fire support officers (FSOs) for the brigade and battalion/task force (TF). However, this document doesn't adequately address the company FSO's role as the refiner/executor of the brigade and battalion/TF plan.

This article provides the company FSO with tactics, techniques and procedures (TTPs) to help him understand his duties and responsibilities, using the eight troop-leading procedures (TLP) as a guide. (See Figure 1.) Additionally, the article introduces a briefing format to help the FSO clearly brief his company commander on the fire support plan and how fires support the scheme of maneuver.

1. Receive the mission. First, the FSO receives the mission as an oral or written order. He accompanies the company commander to the battalion/TF orders briefing, which allows him to hear firsthand what the mission is and how the company fits into the scheme of maneuver and fires. Of even greater importance, he meets with the battalion/TF FSO.

During the operations order (OPORD) briefing, the S2 describes in detail how the enemy is anticipated to fight; the FSO gathers the information listed in Figure 1. The FSO also determines the capabilities and limitations of the enemy and information the company commander will use in the company intelligence preparation of the battlefield (IBP) as he develops the maneuver plan. The FSO will use this information to help him develop a fire support plan to support the company commander's plan.

Second, the FSO reads the OPORD, focusing on the brigade and TF mission as well as commander's intent. This allows him to "visualize" how the brigade will fight and his company's part in the plan. The brigade/TF commander's intent provides the FSO a framework of how fire support will be used to support the operation. He gleans the information listed in Figure 1 from the OPORD.

The TF FSO briefs the TF fire support plan as part of the OPORD. During the briefing, the FSO describes the specifics of how the brigade and TF will execute the fire support plan to support the brigade and TF schemes of maneuver. The company FSO learns the essential fire support tasks (EFSTs) and what responsibility his company has for accomplishing which tasks. This information is found in the OPORD's fires paragraph and associated matrices. The FA organization for combat tells the FSO what FA assets are available to the brigade.

After gathering information from the OPORD, the company FSO asks his commander for a mission statement and the commander's guidance. The FSO also should be at the company commander's back brief to the TF commander. During this briefing, the FSO will hear the company mission statement and any task clarification issues.

Before the FSO receives the company commander's guidance, he should inform and clarify with the commander what EFSTs the company is responsible for executing. This tells the commander how fires are planned for the company, so he can formulate a scheme of maneuver and issue guidance based on the entire plan, not just the maneuver plan.

2. Issue the warning order. (See Step 2 in Figure 1.) After the FSO and commander receive the order, they return to the company area. The company commander then issues a WARNO. As part of the order, the commander addresses the situation/mission, the start time of the operation and the time and place he will issue his OPORD. This allows the company leadership time to begin preparations for the operation and start pre-combat checks (PCCs).

During this step, the FSO issues his own WARNO to the fire support team (FIST) headquarters and platoon observers. The FSO briefs all information available about the upcoming operation using the documents from the battalion OPORD. Additionally, he provides the FIST specific PCCs and pre-combat inspections (PCIs) to complete the operation. He also informs the commander and TF FSO of his equipment status (based on the standing operating procedures, or SOP) and updates that information as the situation changes.

3. Begin planning. After the WARNO is issued, the FSO develops a fire support plan based on the commander's guidance he received and what he knows about the brigade and TF plan. (See Step 3 in Figure 1.)

He reads and analyzes the TF OPORD to determine what targets he's responsible for executing and if the targets need refining. While reading the OPORD, he keeps his company commander's guidance in mind to determine if any brigade or TF targets meet the guidance, eliminating duplication of targets. The FSO plans any additional targets necessary to meet the company commander's guidance based on target allocations. At the same time, he develops the company fire support plan and briefs it to his company commander.

4. Arrange for movement. The FSO positions his forward observers (FOs), if applicable, and FIST vehicle (FISTV) based on the observation plan and moves with the company/team to the assembly area (AA) or attack position.

5. Conduct reconnaissance. The FSO accompanies the company commander on his reconnaissance of the terrain where the operation will be conducted and goes as far forward as the tactical situation permits. The reconnaissance continues the planning process, confirming or denying the tentative plan. If the commander makes changes to the plan based on the recon, the FSO updates the tentative plan. The FSO con-

1. Receive the mission.
- From the S2 intelligence briefing:
  - Terrain and Weather
  - Enemy Situation and Most Likely and Most Dangerous Courses of Action (COAs)
- From the operations order (OPORD):
  - Brigade and Task Force (TF) Mission and Commander's Intent
  - Concept of the Operation and Scheme of Maneuver
  - Task Organization
  - Tasks to His Company
  - Tasks to the Mortars
  - Copies of Graphics and Execution/Synchronization Matrix
- From the battalion/TF fire support officer (FSO):
  - TF Essential Fire Support Tasks (EFSTs)
  - Organization for Combat
  - Fire Support Execution Matrix (FSEM)
  - Target List Worksheet
  - Fire Support Overlay
- From the company OPORD: Mission and Guidance

2. Issue a warning order (WARNO).
- Participate in the company commander's WARNO.
- Brief all available information on the execution of fires and provide fire support documents to forward observers (FOs), commanders, platoon leaders and mortars with attachments; issue the same information to firesupport team (FIST) headquarters.
- Get the commander's timeline.
- Identify/begin pre-combat checks (PCCs) and pre-combat inspections (PCIs).
- Notify company commander/battalion FSO of changes in status (war stoppers).

3. Begin planning.
- Attach overlays and plot targets.
- Read and analyze the TF plan again and apply company commander's guidance.
- Determine observation requirements.
- Refine targets based on the commander's guidance.
- Plan allocated targets based on the commander's guidance and target allocations.
- Develop the company fire support plan.
- Develop the FSO briefing and advise the company commander.

4. Arrange for movement.
- Position FOs/FIST vehicles (FISTVs) based on the observation plan.
- Move with company/team to the assembly area (AA) or attack position.

5. Conduct reconnaissance. Reconnoiter the area with the company commander for factors influencing the targets/observation plan; consider terrain, target locations, FISTV locations and triggers, at a minimum.

6. Complete the plan. Refine the targets and observation plan based on the reconnaissance.

7. Issue the order. The order is based on the unit standing operating procedures (SOP), scheme of fires and observation plan.

8. Supervise.
- Conduct PCCs.
- Continue to refine the fire support plan.
- Rehearse the plan.
- Develop a sleep plan for 24-hour operations.

Figure 1: Company Fire Support Officer (FSO) Troop-Leading Procedures (TLP). The eight TLP were taken from *FM 71-123 Tactics, Techniques and Procedures for Combined Arms Heavy Forces: Armored Brigade, Battalion/Task Force and Company/Team,* Page 1-11.

1. Situation:

- Orient the commander to the map/area of operation:
  - Point out grid north/address and briefly explain key terrain.
  - Point out the battalion's and company's AO (PLs, axes, objectives, EAs, etc.), friendly and enemy obstacles, avenues of approach and mobility corridors, and any known or suspected enemy locations.
  - Point out all locations of your company and other TF elements. Include any attachments to the company or TF as well as other friendly units that will call-for-fires from the DS artillery battalion (i.e., COLTs, scouts and adjacent TF units).
- Briefly explain:
  - The TF commander's mission/intent and concept of the operation, pointing to the map and graphics as you explain.
  - State the TF commander's intent for fires and attack guidance.

2. Mission: State the company mission verbatim from the commander' guidance and explain the company scheme of maneuver, pointing to the map and graphics as you explain.

3. Execution:

- State the company commander's guidance for fires verbatim:
  - Briefly address how the guidance was met.
  - Address and explain any part of the guidance you are unable to meet.
  - Ask the commander for any changes or additional guidance he may have.
- State the fire support assets available:
  - At a minimum, state what assets the company can request fire support from, i.e., DS battalion, TF mortars, company mortars (light companies only) and naval gunfire. Brief other assets available to the brigade, such as a reinforcing battalion and CAS, but emphasize that unless the TF has allocated them, the company can't request fires from these assets.
  - *Priority of Fires*. State the TF priority of fires (which company) by phase, followed by the company priority of fires (which platoon) by phase.
  - *Priority Targets.* State the number of priority targets the company has and point them out on the overlay.
  - *Final Protective Fires.* State the number, size and asset for each FPF as you point them out on the overlay.
  - *Special Munitions Allocations.* State the quantity, if any, of each special munition the company is allocated (i.e., 15 minutes of FA smoke). The munitions to discuss are smoke (FA and mortar), Copperhead, illumination, FASCAM and DPICM.
  - *Any Other Allocations.* The number of targets allocated by the TF by asset (FA or mortar) for planning. State if the company is allocated CAS sorties (by aircraft type and ordnance, if known).
- State the scheme of fires:
  - Brief the FSEM; brief the scheme of fires target by target, by phase and in the chronological sequence you expect them to be executed. Point to each target on the overlay. Cover all the elements of the EFST (task, purpose, method and effects) or, at a minimum, the task and purpose for each target.
  - Explain in *detail* why each trigger, observer and location was chosen for each target. Explain how each target supports the company's plan and how it relates to enemy forces and time.
- Brief the FSCM and restrictions: Brief all FSCM, when they are in effect and other restrictions on fires, i.e., the TF commander's approval required to fire illumination.

4. Service Support: Brief the status of company fire support personnel and equipment, i.e., the number of personnel available and the G/VLLD, radios, weapons, FISTV and amount of fuel available. For light infantry companies, brief the ammunition load for the 60-mm mortars on hand and expected resupply.

5. Command and Signal:

- Point to the location of the FISTV and brief its movement and positioning plan as well as the employment option you have chosen.
- Brief and point out the locations of the platoon FOs, their movement and positioning plan and control options.
- Brief what nets you will be operating on, who you will be talking to and the call signs for all fire support assets.

Legend:

AO = Area of Operations
CAS = Close Air Support
COLTs = Combat Observation Lasing Teams
DPICM = Dual-Purpose Improved Conventional Munition
DS = Direct Support
EAs = Engagement Areas
EFST = Essential Fire Support Task
FASCAM = Family of Scatterable Mines
FISTV = Fire Support Team Vehicle
FSCM = Fire Support Coordinating Measures
FSEM = Fire Support Execution Matrix
FOs = Forward Observers
FPFs = Final Protective Fires
FSO = Fire Support Officer
G/VLLD = Ground/Vehicular Laser Locator Designator
PLs = Phase Lines
TF = Task Force

Figure 2: Company FSO Briefing Format

siders terrain, target locations, FISTV location and triggers, at a minimum.

6. Complete the plan. Based on the reconnaissance, the FSO makes the appropriate changes to the plan, including new guidance by the company commander and his other changes.

Next, the FSO briefs his company commander in a clear and concise manner, explaining how fires will support the scheme of maneuver. The instructors of the FA Officer Basic Course at the FA School, Fort Sill, Oklahoma, use the format shown in Figure 2 to teach lieutenants how to brief their commanders.

Although the format appears that the briefing will be rather lengthy, the FSO should be able to brief his company commander using this format in about 20 minutes. In a time-sensitive environment, the format can be prioritized and modified based on the time available.

7. Issue the order. Next, the FSO forwards the plan to the battalion/TF FSO for approval and briefs his FIST. He briefs the fire support portion of the company OPORD according to the unit SOP. The information is in the FSO's briefing to the company commander, specifically the scheme of fires and observation plan.

8. Supervise. The FSO next focuses on tracking and completing the PCCs and PCIs initiated in Step 1. The TF FSO ensures the FSO receives all the changes and (or) updates to the plan through constant communications.

The FSO supervises subordinates on completing their tasks in the fire support plan. He gives them a reasonable time to execute the orders and then checks them by a combination of back briefs, inspections and rehearsals.

The most important thing the FSO does before executing a fire plan is to rehearse. Rehearsals improve the total comprehension of the plan at all levels. Participants who are unclear on specific portions of the plan gain answers through the repetitiveness of rehearsals.

At the company-level, the FSO ensures the fire support plan is rehearsed in conjunction with the maneuver rehearsal, if possible. If the company commander doesn't conduct a rehearsal, the FSO should conduct a fire support rehearsal of his own. The rehearsal includes, at a minimum, all members of the FIST and the fire support assets. FSOs use the target list and execution matrix to "walk through" the operation. The FSO must determine a sleep plan for his soldiers in 24-hour operations or executing fires will suffer due to fatigue.

The company FSO is an important asset to the company, TF and brigade. He gathers information and works with his company commander to plan and execute fires to win the brigade fight.

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Hasty Astro: Taking the Needle Out of the Equation

The Joint Readiness Training Center (JRTC), Fort Polk, Louisiana, has witnessed a trend over the last several years in units' abilities to conduct hasty survey. Field Artillery batteries generally don't know how to perform hasty astro techniques, which is the second best means of getting survey data. The leaders in the batteries have had no institutional training on the tasks, and hasty astro procedures are not referenceable in the manuals common to the FA cannon battery leaders.

Batteries typically deploy initially into an area of operations at the JRTC without survey support. This forces the battery commander to decide what method of lay he will use to establish directional control for his battery location. In many cases, the battery commander elects to lay the safe by grid azimuth-which should be the last resort. The grid-azimuth method can lead to fratricide because of the error that magnetic attractions can introduce into the data.

FM 6-2 Tactics, Techniques and Procedures [TTP] for Field Artillery Survey with Change 1, Chapters 7, 10 and 13, contains the procedures for conducting hasty astro, but most platoon leaders/executive officers (XOs), chiefs of firing battery (CFBs) and gunnery sergeants (GSGs) don't have this manual. Instead, they use *FM 6-50 TTP for the Field Artillery Cannon Battery* and *ST 6-50-20 Battery Executive Officer's/Platoon Leader's Handbook* as references, but these publications don't cover the hasty astro procedures. In addition, hasty astro procedures aren't taught in the advanced NCO course (ANCOC), and lieutenants in the officer basic course (OBC) only get a limited exposure to the survey method. So a baseline knowledge of hastry astro isn't prevalent. As a result, leaders don't have confidence in hasty astro.

A firing unit can obtain directional control day or night (weather permitting), using a celestial body to an accuracy of plus or minus two mils with the forward entry device (FED), hand-held terminal unit (HTU) and precision lightweight global positioning system receiver (PLGR). This is not the Polaris-Kochab or Polaris-2 methods, which are time-consuming or obsolete. When trained on hasty astros, the Big Three (XO, CFB and GSG) can perform a hasty astro as quickly as they can "float the needle" to use the grid azimuth method.

Hasty astro is a proven survey technique that eliminates the error associated with the magnetic attraction inherent in laying by grid. It is a simple and quick method, more accurate than grid azimuth but requires training so leaders are proficient in its use. If the FA introduces the technique to our battery-level leaders at the schoolhouse, a baseline knowledge will be established. Next, we recommend the FA School update *FM 6-50* and *ST 6-50-20* to include the procedures so users can readily reference the technique. In the interim, FA units should develop and execute a training plan to raise the abilities and confidence of FA users to perform the hasty astro, using *FM 6-2,* Chapters 7, 10 and 13.

If properly trained, leaders can competently use the hasty astro method the next time survey is unavailable and "take the needle out of the equation."

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Suppressing the Objective
Echeloning Fires in the Attack

by Major Michael J. Forsyth

Your battalion just received the mission to conduct a deliberate attack on an enemy company supply point. The intelligence estimate places two DSHK air defense heavy machine guns and two 82-mm mortars on the objective. The battalion commander tells you fires must suppress those weapons for his unit to succeed. He wants you, the fire support officer (FSO), to maintain suppression—smoke and lethal fires—as long as possible, so he can move his companies in close with minimal casualties.

How are you going to satisfy the commander's concern? You echelon the fires of several weapon systems on the objective up to the minimum safe distances (MSDs) of each asset.

The purpose of echeloning fires is to maintain constant suppression on an objective while using the optimum delivery system up to the point of its MSD in training or risk estimate distance (RED) in combat operations. This provides protection for the friendly troops as they move to and assault an objective, allowing them to get in close with minimal casualties. It prevents the enemy from observing and engaging the assault by forcing them to take cover, allowing the friendly unit to continue the advance unimpeded.

This article focuses primarily on echeloning fires, providing step-by-step techniques for planning, preparing and executing fires in a deliberate (or hasty) attack on an objective up to the MSDs for selected weapon systems.

Planning. There are specific items of information the FSO must glean from the military decision-making process (MDMP) to formulate a workable fire plan. To start, the FSO must determine the locations–both suspected and confirmed–of the enemy weapon systems the commander wants to engage. The FSO works closely with the maneuver battalion intelligence officer gathering information. If higher headquarters has not already targeted these positions, the FSO targets them with fires according to the commander's attack guidance.

The FSO then determines what weapon systems are available to his maneuver unit for the assault. He gets this information from the higher headquarters' fire support plan in the Fires Paragraph 3(a)2 of the operations order (OPORD) or Fire Support Annex D. Allocations run the gamut from naval surface fire support to close air support (CAS) in addition to Field Artillery.

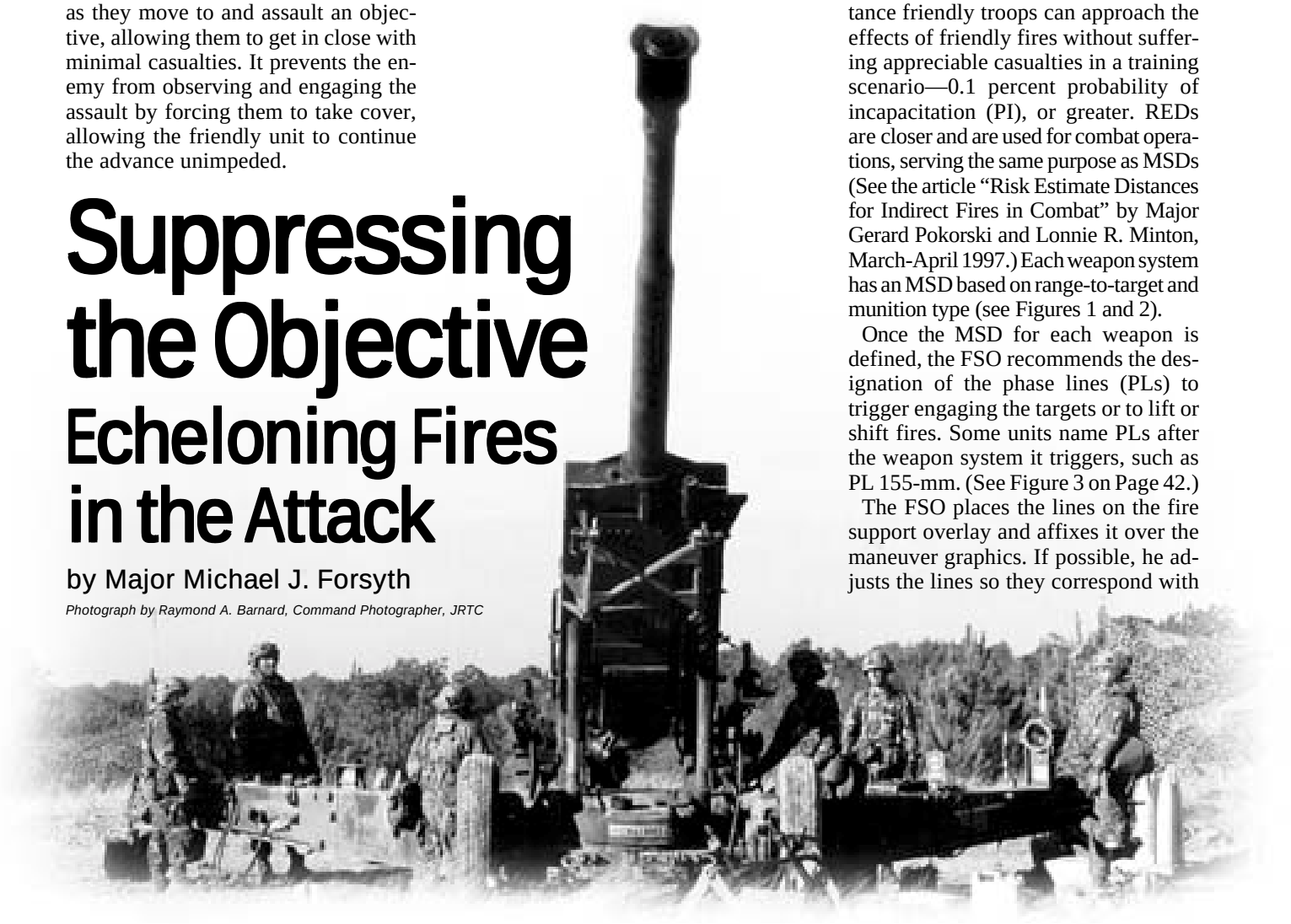
Knowledge of all systems and munitions is critical for the fire supporter when sequencing the fire plan. The FSO uses the information to determine the length of the prep by weapon system based on the number of volleys, salvos and minutes of munitions or sorties of aircraft allocated to the attack.

Next, the FSO ensures he understands the battalion scheme of maneuver, rate-of-march and axis/route-of-advance. The FSO gets the information from the battalion operations officer during the MDMP. (As you already can see, the key to planning echeloned fires is for fire support to be fully integrated into battle staff planning.) The FSO uses the information to determine the timing of fires, positioning of the MSD lines from the targets and the objective for all weapon systems.

MSD is defined as the minimum distance friendly troops can approach the effects of friendly fires without suffering appreciable casualties in a training scenario—0.1 percent probability of incapacitation (PI), or greater. REDs are closer and are used for combat operations, serving the same purpose as MSDs (See the article "Risk Estimate Distances for Indirect Fires in Combat" by Major Gerard Pokorski and Lonnie R. Minton, March-April 1997.) Each weapon system has an MSD based on range-to-target and munition type (see Figures 1 and 2).

Once the MSD for each weapon is defined, the FSO recommends the designation of the phase lines (PLs) to trigger engaging the targets or to lift or shift fires. Some units name PLs after the weapon system it triggers, such as PL 155-mm. (See Figure 3 on Page 42.)

The FSO places the lines on the fire support overlay and affixes it over the maneuver graphics. If possible, he adjusts the lines so they correspond with



Photograph by Raymond A. Barnard, Command Photographer, JRTC

Weapon	Description	Minimum Safe Distance	
		10% PI	0.1% PI
MK 82 LD	500-Pound Bomb	250 m	425 m
MK 82 HD	500-Pound Bomb	100 m	375 m
MK 82 LGB	500-Pound Bomb (GBU-12)	*	*
MK 83 HD	1,000-Pound Bomb	275 m	500 m
MK 83 LD	1,000-Pound Bomb	275 m	500 m
MK 83 LGB	1,000-Pound Bomb (GBU-16)	275 m	500 m
MK 84 LD	2,000-Pound Bomb	225 m	500 m
MK 84 LGB	2,000-Pound Bomb (GBU-10-22)	*	*
MK 20**	Rockeye CBU (Antiarmor)	*	*
2.75 FFAR	Rockets (Various Warheads)	100 m	175 m
SUU-11	7.62-mm Mini-Gun	*	*
M-4/M-12/SUU-23/M-61	20-mm Gatling Gun	*	*
GAU-12	25-mm Gatling Gun	*	*
GPU-5A/GAU-8A	30-mm Gatling Gun	*	*
AGM-65 (AF)	Maverick Missile (TV/IR/Laser)	*	*
MK 21/29	Walleye I 1,000-Pound Bomb (TV Guided)	275 m	500 m
MK 23/30	Walleye II 2,400-Pound Bomb (TV Guided)	*	*
AGM-123A	Skipper 100-Pound Bomb (Laser Guided, Rocket Boosted)	275 m	500 m

* Minimum safe distances have not been determined.
** Not recommended for use near friendly troops.

Legend:

AGM = Air-to-Ground Missile
CBU = Cluster-Bomb Unit
FFAR = Folding-Fin Aircraft Rocket
GAU = Gun/Aircraft Unit
GBU = Guided-Bomb Unit
GPU = Gun/Pod Unit
HD = High Drag
IR = Infrared
LD = Low Drag
LGB = Laser-Guided Bomb
MK = Mark
PI = Probability of Incapacitation
SUU = Suspension Unit Universal

Figure 1: Close Air Support (CAS) Minimum Safe Distances (MSDs). Data taken from "CAS Ordnance Reference Data," *FM 71-123 Tactics and Techniques for Combined Arms Heavy Forces: Armored Brigade, Battalion/Task Force and Company/Team* (Table 7-2 on Page 7-12).

prominent terrain for easy identification and triggering. The FSO must be careful to ensure that in adjusting the lines, he doesn't push them closer to the targets in violation of weapon MSDs.

The final piece to planning fires is the scheme of echelonment. The concept behind echeloning fires is to begin suppressing the targets on and around the objective using the system with the largest MSD. As the maneuver unit closes the distance (i.e., crosses the respective MSD line) en route to the objective, the fires lift (or shift). This triggers the engagement of the targets by the delivery system with the next largest MSD. The length of time to engage the targets is based on the rate of the friendly force's movement between the MSD and PLs.

The process continues until the system with the least MSD lifts and the maneuver unit is close enough to make its final assault and clear the objective. To ensure no gaps in fires, the FSO triggers the next system *before* lifting the last delivery asset.

Using echelonment of fires within the specified MSD for a delivery system requires the unit to assume some risks. FSOs must remember that the decision to bring fires within MSD of friendly troops is a maneuver commander's decision. Therefore, the FSO must get the

Range-to-Target (Meters)	1,000	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000
60-mm Mortar	330	330								
81-mm Mortar	330	330	332							
105-mm Howitzer			340	340	350	360				
155-mm Howitzer			430	440	450	460	470	530	600	680

Figure 2: Minimum Safe Distances (MSDs) for Common FA Systems in Meters. These MSDs are for indirect fires where the gun-target line is perpendicular to the maneuver axis of advance. Probable error increases with range, so the MSDs increase. MSD Sources: *FM 6-141-1 Field Artillery Target Analysis and Weapons Employment: Non-Nuclear (w Ch1)* and data from the Joint Readiness Training Center (JRTC) Analysis Feedback Facility, Fort Polk, Louisiana.

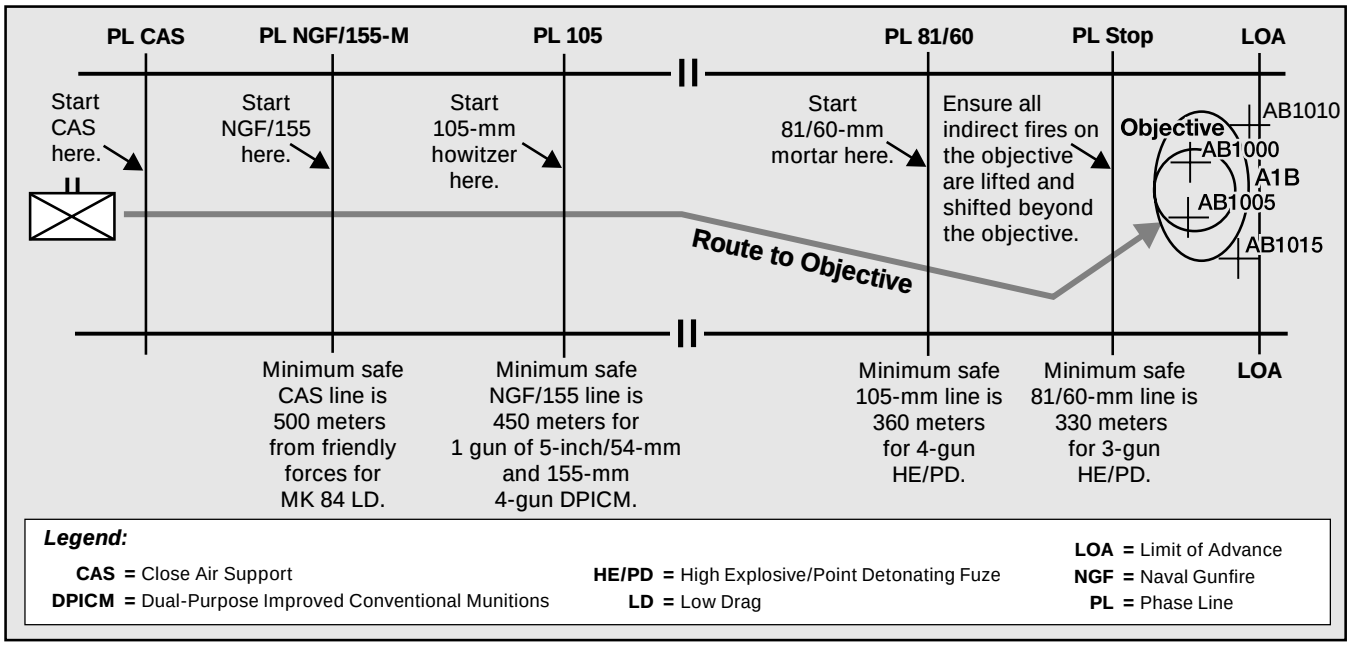


Figure 3: Graphic of an Echeloned Fire Plan for a Deliberate Attack

commander's approval before proceeding with the preparation phase of this process.

Preparation. To ensure crisp execution of the plan, the FSO must do several things. When possible, he should participate in a leader's reconnaissance to physically identify the PLs and targets in the vicinity of the objective. This enables the FSO to confirm the validity of the triggers based on the lay of the ground. If adjustments make the plan easier to execute, the FSO can then make them. Also, reconnaissance gives the opportunity to make refinements to the targets based on the actual location of the enemy. Once the unit observes the targets, it must maintain surveillance in the event the enemy moves.

Following the reconnaissance, the FSO conducts pre-combat inspections. He ensures that all observers–especially those for the lead element–input the PLs in their precision lightweight global positioning system receivers (PLGRs). Using the capability of the PLGR, such as the way-point or bull's-eye functions, fire support personnel can lift and trigger the appropriate asset at the right time. These functions prevent the friendly force from crossing an MSD line before the asset's fires have been lifted and help alert the FSO when to call in the next delivery system.

The linchpin in preparing the fire plan is a solid fire support rehearsal with emphasis on the communications plan. When conducting the rehearsal, the FSO must cover target purpose, refined target locations, route to the objective, MSD PLs, commo nets and radio calls (or codewords), primary and alternate observers and the appropriate asset. A representative from every delivery asset *must* attend this rehearsal, giving observers and firers the opportunity to iron out problems with the plan. All players then conduct a radio technical rehearsal to verify communications nets are operable.

Execution. When the unit approaches the designated PL en route to the objective, the FSO begins the preparation (Figure 3). As the unit continues its movement toward the objective, the first delivery system engages its targets. It maintains fires on the targets until the unit crosses the next PL that corresponds to the MSD of the weapon.

To maintain constant pressure on the targets the unit must start the next asset *before* the previous asset lifts. This ensures no break in fires, enabling the friendly forces' approach to continue unimpeded. However, if the unit rate-of-march slows, the fire support system must remain flexible to the changes while continuing the pressure.

The FSO lifts and engages with each asset at the prescribed triggers, working the fires from the system with the largest MSD to the smallest. Once the maneuver element reaches the final PL to lift all fires on the objective, the FSO shifts to targets beyond the objective to seal the area. This enables the unit to fix and finish the destruction of the enemy on the objective.

Conclusion. Echelonment of fires is a technique for synchronizing and integrating close fires in a deliberate attack while safeguarding the soldiers making the assault. Use of the procedure allows fire supporters to mass fires of various delivery systems at the proper time and location to satisfy the maneuver commander's intent. Several rotations through the Joint Readiness Training Center (JRTC), Fort Polk, Louisiana, during both live-fire and force-on-force scenarios, have validated the technique.

Using echelonment in home-station training builds confidence among fire support leaders and credibility in maneuver circles that we can adequately support a hasty or deliberate attack.

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SEVEN Steps to Managing FSCMs

by Major Patrick M. Manners

You are an FA battalion S3—or battalion or battery fire direction officer (FDO) or, maybe, work in a brigade or battalion fire support element (FSE)—at your rotation at the National Training Center (NTC), Fort Irwin, California. You've done your homework, so fires will set the best conditions for the soldiers out front at "the point of the spear." Short of actual combat experience, you've done your best to become a subject matter expert in the art and science of fires.

In the rotation, your brigade combat team (BCT) is transitioning to live-fire operations. In this instance, the BCT is conducting a deliberate attack supported by close air support (CAS), Army attack aviation, your direct support (DS) battalion, a reinforcing (R) battalion and a light battery attached to the DS battalion. The BCT has inserted its brigade reconnaissance troop (BRT) and combat observation lasing teams (COLTs) to observe target areas of interests (TAI) and identify enemy obstacles, high-value targets and infantry strongpoints. This allows the BCT to refine targets and finalize the scheme of fires.

The BCT is scheduled to cross the line of departure (LD) at 0500. The BCT and battalion task force (TF) FSEs have been working top-down/bottom-up target refinement all night and have updated the BCT target list, observer and TF responsibilities, and triggers and passed the information to the FA battalion fire direction center (FDC). The FDC worked to sort out the new target list and assign targets; recheck triggers, ammunition and positioning requirements; and, finally, pass a detailed scheme of fires to the reinforcing battalion and firing batteries.

It's now 0445. All the observers are trained on their targets and the guns are laid. Everyone else is leaning forward, waiting to cross the LD.

Suddenly, an NTC observer/controller (O/C) says, "You aren't fit to fight, and you're not authorized to go red indirect at this time." You wonder how this can *be*—all the work, all the preparation, and just when it matters most, you're told you're *not ready*. The O/C reports your BCT doesn't have 100 percent visibility on all fire support coordination measures (FSCMs). You realize the BCT will not cross the LD on time because it has to wait for its Field Artillerymen to get their act together.

This is one of those opportunities in training where Field Artillerymen feel some pain that otherwise would come in a much larger dose in the form of indirect fire fratricide in combat. In all the FMs, TMs and published tactics, techniques and procedures (TTPs), there is not one word on how Field Artillerymen track, update, activate/deactivate or adjust FSCMs.

While on a rotation at the NTC, a unit can expect to track a fire support coordinating line (FSCL), coordinated fire line (CFL), 23 corps no-fire areas (NFAs), 11 corps restricted-fire areas (RFAs), three division airspace coordination areas (ACAs) and eight division air corridors. By the time the BCT develops its own FSCM requirements, artillery units usually track an additional seven to 25 brigade NFAs, two to five brigade ACAs, two to seven brigade air corridors, one restricted operating zone (ROZ) and, potentially, one to two restricted-fire lines (RFLs). If you take the worst-case scenario and combine all echelons' FSCM requirements, an FA battalion at the NTC easily could end up tracking the following: one FSCL, one CFL, 48 NFAs, eight ACAs, 15 air corridors, one ROZ and two RFLs—76 FSCMs.

There are a number of reasons why there could be so many FSCMs: the location of the BCT CFL, which changes over the course of the fight; the BCT's use and positioning of its BRT and scouts; and the amount of fixed- or rotary-wing support available to the BCT, to name just a few. The bottom line is you must have a system to manage FSCMs, so when you clear fires at every echelon, you can use fires to leverage the BCT's maneuver operations with a reasonable expectation of a low risk of indirect fire fratricides.

So how *do* you track all of these FSCMs? You apply the seven steps to managing FSCMs. These steps should be tailored for your unit and incorporated into your FA battalion and maneuver tactical standing operating procedures (TACSOPs).

1. Define FSCM authority and responsibilities. FSCMs are a BCT responsibility, not just an FA responsibility. Situational awareness is only as good as a BCT's reporting system, regardless of whether it's automated or manual.

Timely and accurate reporting of all elements in the BCT's battlespace is paramount. For example, if a maneuver battalion TF scout section forward of the CFL is given an NFA and then proceeds to move outside the radius of its NFA, the section needs to report its new location to its battalion TF headquarters. From there, the TF headquarters reports it to the BCT that disseminates the new location and NFA adjustment to all other BCT elements. (See Figure 1 on Page 44.)

The BCT commander and his fire support coordinator (FSCOORD) are responsible for ensuring the BCT has an FSCM management system. The BCT S3 and fire support officer (FSO) must implement that system and ensure all echelons use it. Commanders and fire supporters at all echelons below the BCT must ensure their staffs know the BCT FSCM management system and are trained to execute it.

2. Describe the BCT's FSCM naming convention. You must have a naming convention or system that enables you to determine quickly who an FSCM

belongs to—in particular, NFAs, ACAs and RFAs. Each maneuver TF, the BCT headquarters and its rear area and artillery elements need their own block of names by which to name FSCMs. This enables each echelon in the brigade to identify who the FSCMs belong to.

For example, if you are a battalion TF FSO and have four scout sections forward, you want NFAs around them. If one of the sections moves, how do you know which NFA was covering that particular section? It's not easy....you're not just tracking your four scout sections' NFAs, you're tracking (potentially) as many as 48 NFAs in the BCT's battlespace. However, using a naming convention similar to your target block system, you easily can identify the old NFA for that scout section, delete it and create a new NFA.

For example, the 1st Scout Section in TF 3-69 Armor goes to ground at Grid 12345678 and requires an NFA. From the BCT naming convention, the TF 3-69 FSO assigns NFA 369SC1A. "369" denotes this NFA belongs to 3-69 Armor. The first two letters "SC" identify the NFA as covering a scout section. The first number "1" denotes that this is the 1st Scout Section and the last letter "A" denotes this is its first NFA over its initial position. If the scout section moves, the FSO deletes NFA 369SC1A and creates a new NFA around the scout, labeling it NFA 369SC1B. The last letter is the only part of the NFA label that changes. In this case, it changes to "B," denoting the 1st Scout Section's second position.

3. Outline procedures for activating/deactivating FSCMs. FSCMs are always in a state of flux. Mission, enemy, terrain, troops and time available (METT-T) drive our decisions to employ FSCMs. You need a central clearinghouse in the BCT to control FSCMs. The most likely place is in the BCT tactical operations center (TOC).

In the BCT TOC, the BCT S3, FSO and fire support NCO (FSNCO) coordinate FSCM tracking and execution. They work in concert with the maneuver battalion TFs, BCT rear area, supporting artillery battalions and BCT commander and his FSCOORD to manage the overall BCT FSCM picture.

But the picture is just like a snapshot in time. As the battle progresses, the BCT commander or his FSCOORD moves the CFL while the battalion TFs report changes in their NFA requirements. In turn, the BCT FSNCO captures the input, "paints the picture" and continuously disseminates it across the BCT.

4. Define the method to maintain a common FSCM picture. How do you ensure you have a common FSCM picture throughout the BCT? Our older tactical fire direction system (TACFIRE) and newer advanced Field Artillery tactical data system (AFATDS) have FSCM tracking tools, but currently they are either not robust enough or too vulnerable to hardware failure. So, until the day arrives when you no longer need pencil or paper—can manage FSCMs digitally—it's best to be prepared.

Your BCT must have a system that enables you to track which FSCMs are in effect, who owns them and if they're plotted properly on a map. You must make sure FSCMs have visibility with others in the TOC, not just the FSNCO in the FSE or the battalion/battery FDO. A simple system to help each echelon uniformly track FSCMs might look like the matrix in Figure 2.

At the BCT, the battalion TFs, the supporting FA battalions and batteries, and the BCT rear area each should have a copy of the FSCM matrix. The BCT TOC simply runs down each column and covers the affected changes.

5. Define procedures for updating FSCMs. This is your biggest challenge. You have to update the matrix using a number of parameters. For example, when the BCT commander orders the CFL moved, the BCT TOC gets the word out as soon as possible. Probably the next FSCMs to change in the domino effect will be NFAs.

These changes will take some time to sort out, so you need to prioritize your efforts for the BCT sector most affected by indirect fires. This usually can be traced to which unit in the BCT has priority of fires (POF).

Once you have the NFA sorted out in that sector, the BCT TOC disseminates the changes and moves on to the next

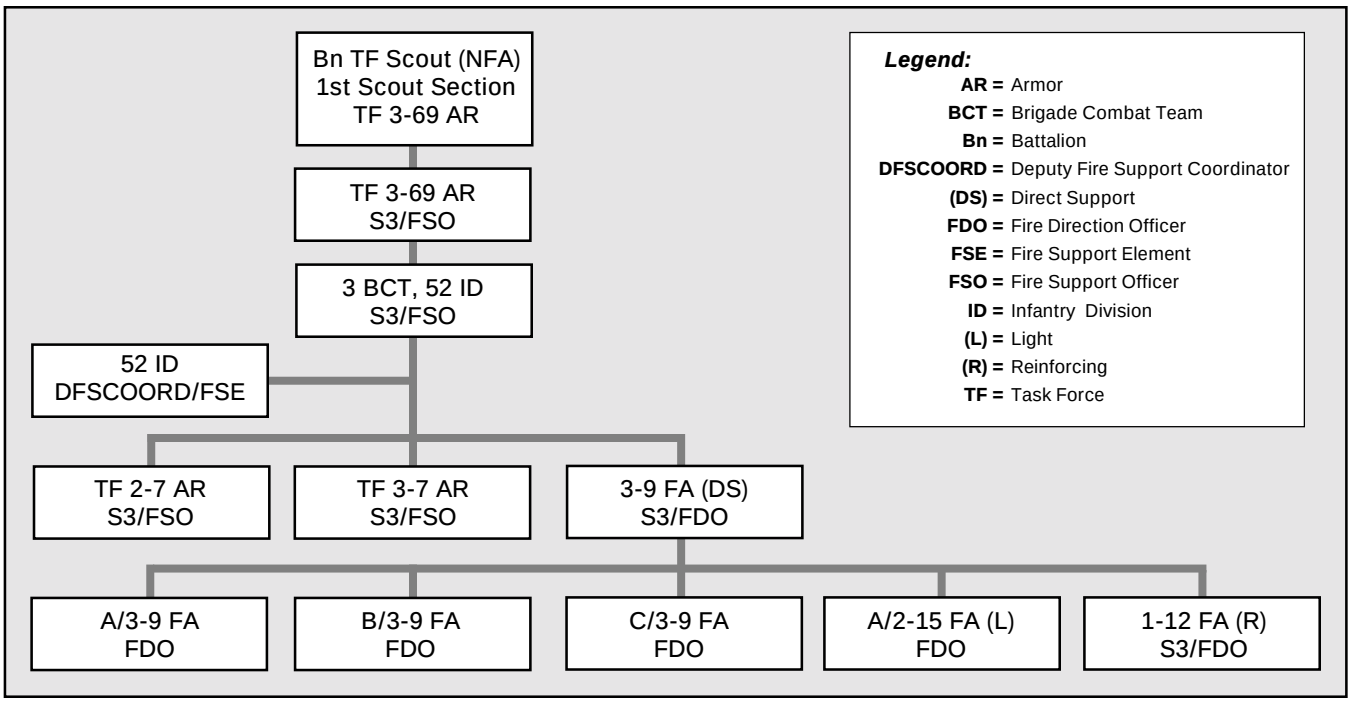


Figure 1: The Trail of a Task Force No Fire Area (NFA)- Who Needs to Know?

FSCM	X Corps	52d Division	3 BCT	TF 3-69	TF 3-7	TF2-7
FSCL	PL Jack					
CFL		PL Tom				
RFLs			**RFL** 3BCTRFL01		**RFL** 37RFL20	
ACAs	**MRRs** 10XXXBrazil 10XXXChina **ROZ** 10XXXTurtle 10XXXFrog	**ACAs** 52XXAlaska 52XXTexas 52XXNevada **Air Corridors** 52XXEagle 52XXHawk 52XXFalcon **UAV**	**ACAs** 3BCTDallas 3BCTOgdon 3BCTAtlanta 3BCTPhoenix **Air Corridors** 3BCTBee 3BCTWasp 3BCTHorsefly			
RFAs	**RFAs** 10XXX01Church 10XXX02Power 10XXX03Water 10XXX04Cemetery	52XXHummingbird	3BCTMosquito 3BCTGnat **SAAFR** 3BCTAnt 3BCTTermite			
NFAs	**NFAs** 10XXXLRSD1A 10XXXLRSD2A 10XXXLRSD3A 10XXXLRSD4A 10XXXSOF1 10XXXSOF2 10XXXSOF3 10XXXSOF4	**NFAs** 52XXLRSD1A 52XXLRSD2A 52XXLRSD3A 52XXLRSD4A 52XXGBCS1A 52XXGBCS2A 52XXPP551A 52XXPP552A 52XXT-321A	**NFAs** 3BCTBRT1A 3BCTBRT2A 3BCTBRT3A 3BCTBRT4A 3BCTCOLT1A 3BCTCOLT2A 3BCTCOLT3A 3BCTCOLT4A 3BCTFAC1A	**NFAs** 369SC1A 369SC2A 369SC3A 369SC4A 369AFISTA 369BFISTA 369CFISTA 369DFISTA 369FAC2A	**NFAs** 37SC1A 37SC2A 37SC3A 37SC4A 37AFISTA 37BFISTA 37CFISTA 37DFISTA 37FAC3A	**NFAs** 27SC1A 27SC2A 27SC3A 27SC4A 27AFISTA 27BFISTA 27CFISTA 27DFISTA 27FAC4A

Legend:

ACAs = Airspace Coordination Areas
BCT = Brigade Combat Team
BRT = Brigade Reconnaissance Team
CFL = Coordinated Fire Line
COLT = Combat Observation Lasing Team
FAC = Forward Air Controller
FIST = Fire Support Team
FSCM = Fire Support Coordinating Measures
FSCL = Fire Support Coordination Line
GBCS = Ground-Based Common Sensor
LRSD = Long-Range Surveillance Detachment
MRRs = Minimum Risk Routes
NFAs = No-Fire Areas
PL = Phase Line
RFAs = Restricted Fire Areas
RFLs = Restricted Fire Lines
ROZ = Restricted Operating Zone
SAAFR = Standard Use Army Aircraft Flight Route
SC = Scout Section
SOF = Special Operations Forces
UAV = Unmanned Aerial Vehicle

Figure 2: FSCM Management Matrix

supported sector. If the BCT isn't in the middle of a meeting engagement, the update probably will work well if conducted every hour on the hour.

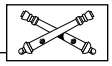
6. Ensure quality control of FSCM information. The quality and reliability of the FSCM information passed, received and translated is critical. The BCT trusts its subordinates will have the right FSCM data, but it periodically needs to verify the FSCM message was received, understood and plotted on the map.

Using the FSCM tracking matrix in Figure 2, each TF periodically reviews its column of FSCMs and scrubs it with the BCT TOC. The timing is METT-T-dependent, but "often" is better than "once in awhile."

For the FA battalion and firing batteries, the task is a little tougher. In this case, the FA battalion TOC interfaces with the BCT TOC and then works with the batteries or even the reinforcing battalion TOC to make sure all echelons have the same picture.

7. Define procedures for straightening out the FSCM picture. The last step deals with getting an element straight if its picture is lost or hopelessly corrupted. Once again, if you use something similar to the FSCM matrix in Figure 2, you can walk through each column with a naming convention that keeps you straight as to which FSCM belongs in which column. Then you quickly can reproduce another FSCM picture for the unit.

If you, as the FDO, FSO or S3, take on FSCM management alone, you soon will find yourself overwhelmed and unfocused. Use the seven steps of FSCM management as a framework for your operations and ensure your BCT crosses the LD on time. But even more importantly, apply the seven steps so the soldiers at the point of the spear will have confidence in the control and effectiveness of your fires.



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