



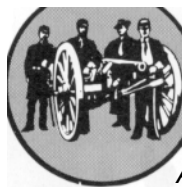
Field Artillery

A Professional Bulletin for Redlegs

April 1994

METL

On-Target Training



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April 1994

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Training for the 21st Century

We have a national strategy that demands the Army be a decisive, strategic force that can deploy around the world and conduct sustained land operations. Our vision of fire support for this power projection Army requires a deployable, lethal and versatile Field Artillery. We must reshape training at the Field Artillery School and Field Artillery Training Center at Fort Sill, Oklahoma, to build the foundation for training this force of the future. Our training must be rigorous and relevant. Success will be measured by the competence of our graduates and efficiency of training.

The process of reshaping artillery training requires we uproot ourselves from the idea that we can simply do business as usual. Our challenge is akin to the task faced by Lieutenant General Lesley J. McNair during World War II. As Commander of the Army Group of Forces, he transformed a small peacetime army into a million trained soldiers, organized as divisions.

McNair, an artilleryman, achieved this feat by adopting a visionary approach to training. Before the war, each branch instructed its own men and arms. McNair emphasized training soldiers as a combined arms team—the same way he envisioned they would fight in battle. McNair succeeded because he had the courage to leave the past behind and take the pilgrimage to the future.

War in a Brave New World. Field Artillery today faces an equally extraordinary challenge. We must revise our programs to train for the reality of future battlefields. Many tasks and standards may remain unchanged, but the conditions of training must be revised to reflect war in the 21st century, not conflict in the Cold War.

Our exercises will use joint forces. Artillerymen need to practice working with Air Force and Navy attack planes, naval gunfire, Marine elements and Special Operations Forces.

We'll oppose varying types of forces. Our soldiers must be prepared to fight "high-tech" and "no-tech" enemies. The world has many threats, and we need to impart to our students the mental agility to

adapt to the enemy they face.

Training must teach our soldiers to think beyond linear warfare and the black lines on the operations overlay. They must be prepared for 6400-mil combat. Training exercises must include tasks that address protecting the force in environments where the only safe area is the ground that units occupy.

We must emphasize the complexity of multinational operations that have high visibility worldwide. On the battlefield, soldiers face a spectrum of challenges—enforcing rules of engagement, dealing with mass media representatives, breaking through language barriers, handling refugees and hostages and interoperating with combined forces—challenges not covered in the basic tactics manuals. We must ensure soldiers and Marines leave Fort Sill understanding the complex nature of the challenges they may face.

New Problems—New Solutions. As in World War II, we must train an Army that's rapidly upgrading its technology and doctrine. Now as then, we need skilled, motivated soldiers led by the best NCOs. In contrast to an atmosphere in which the nation galvanized to fight World War II, today's Army must train in an era of constrained resources and shrinking force structure. We need radical solutions for these unprecedented challenges.

We must exploit technology to "internet" our training. The Army has an arsenal of information technology, including combat simulations, CD-ROM and tele-net-working training (TNET). We must maximize our capacity to communicate. We must pursue imaginative approaches to harness technology to train from the crew to joint task force (JTF) levels.

The Field Artillery School also must "fuse" our training courses. In the past, officers, NCOs and enlisted students worked independently. Each student learned about his place in the combined arms team but had limited opportunities to experience the teamwork in action.

In the future, where possible, we should train students simultaneously in integrated scenarios. We must maximize soldier and Marine joint training, so they can learn

from each other and learn to work together; developing the teamwork that wins battles begins here. No artilleryman should leave Fort Sill without the experience of executing as part of the joint and combined arms team.

Training for Victory. A second hallmark of General McNair's training system was his emphasis on tough, realistic training. He believed that regardless of doctrine and technology, armies need well-trained, disciplined units to succeed in combat. This lesson holds fast today.

Danish Brigadier General Finn Saemark-Thomasen, Commander of the 900-man Nordic Battalion of the United Nations Protection Force in Macedonia, recently called the 300-plus American troops assigned to his battalion "the best soldiers in the world." No wonder—they've had the best preparation in the world: mission-essential task list (METL)-based training.

Lessons learned from Macedonia and other operations other than war (OOTW) confirm that effectiveness in diverse operations doesn't require major changes to unit METLs. This message came out loud and clear at the recent Light Artillery Commanders' Conference at Fort Polk, Louisiana. METL-based training is the key to the Army's success in the spectrum of operations from the most brutal combat to the most peaceful OOTW. Warfighting remains the right azimuth upon which to focus training. Trained forces are versatile forces, capable of adapting to new missions and strange, foreboding environments.

Future Focus. To keep our balance as we turn toward the next century, we must pour a solid foundation of future training. We must retain our warfighting focus. We also must seek revolutionary ways to meet the challenges of future Army operations.

Field Artillery/Fire Support training must remain rigorous and relevant, providing our dedicated soldiers and Marines the skills, knowledge and attitude they need to succeed in battle. They deserve no less.

Fire Support!



A Boundary is a Boundary by Any Other Name

As a fire support observer/controller [O/C] for the Battle Command Training Program [BCTP, Fort Leavenworth, Kansas], I have had the opportunity to observe all four corps and most of the divisions wrestle with the delineation between corps and division deep operations. At last check, two of the corps were using the fire support coordination line (FSCL) and the other two were using a non-doctrinal measure they called a "battlefield coordination line" (BCL) to divide responsibility.

Using the FSCL to delineate tactical responsibility causes no real problem for the division, providing the FSCL is placed at a distance that corresponds to the division's ability to see and fight. The corps, however, may experience difficulty in ensuring the safety of its attack helicopters operating beyond the FSCL. Temporary restrictive measures become necessary, and coordination becomes more difficult.

The advantage of corps operations beyond the FSCL is that all weapon systems can be brought to bear with minimal coordination. This is a

dual-edged sword, however, as fires not immediately under the control of the corps can disrupt the corps' shaping of the battlefield.

FM 100-15 Corps Operations states that the FSCL is not normally used to delineate tactical responsibility. Because coordination outside the corps (with the Air Force, for example) is required, changes in the FSCL may take some time to implement.

The *concept* of the BCL makes more sense. The BCL can be placed anywhere, short of or out to the FSCL, without coordination outside the corps. The corps commander may leave himself space to operate and shape the battlefield without the disadvantages inherent in using the FSCL to delineate the battlefield.

The current definition of the BCL (by the two corps subscribing to it) states that it defines both maneuver space and freedom to fire without coordination. The corps may fire and maneuver without coordination beyond the BCL, and the division has total freedom of fires and maneuver short of the BCL. Because the BCL is non-doctrinal, there's confusion

(both in and outside the corps) over its precise definition. Every time a new division is task organized under one of the corps, the term and its ramifications must be explained to all affected members of the new division. This is dysfunctional and unnecessary.

Let's call this thing exactly what it is—a *boundary*. That's right, no new fancy, catchy acronym, but a doctrinal term already understood by everyone. True, "forward boundaries" are not discussed in doctrine. The draft *FM 101-5-1 Operational Terms and Symbols* no longer mentions the terms "rear" or "lateral boundary." A boundary is a boundary. It defines who owns the turf and controls fires and maneuver on a given piece of the battlefield and that it can be crossed only after coordination.

Today's battlefield is, by its nature, complex and chaotic. Clearly there's a need to delineate tactical responsibility. The boundary is simple, already in existence and does the job.

LTC Harold T. Harvey, FA
O/C, BCTP
Fort Leavenworth, KS

Response to "The Mech Company FIST... A Proposal for Reform"

In their letter to the editor, "The Mech Company FIST...A Proposal for Reform" (October 1993), the authors [Second Lieutenant Brian Parillo and Captain Dale Puett] argue that the "heavy mechanized company fire support team (FIST) is obsolete" and that FISTs should be consolidated at the task force (TF) level. Part of their logic for the consolidation is based on the valid premise that fire support is a scarce resource and that our doctrine mandates brigades and TFs integrate fire support with the other battlefield operating systems (BOS).

But the authors also state that the reason for consolidating FIST assets at the TF level is "most company FISTs do very little execution in direct support of their companies [because of scarce fire support resources]...they have become task force executors instead of company planners." The problem is that, except in unique circumstances, company FSOs are *supposed*

to be TF executors—not company fire planners. (See *FM 6-201 Tactics, Techniques and Procedures for the Field Artillery Cannon Battalion*, dated November 1990, for a summary of the top-down fire planning process, including the role of the FIST.)

The company FSO should use his energy to execute the fire support responsibilities his commander is tasked with. In a mechanized or armored environment, the TF FSO will most likely use all his fire support resources to accomplish the mission. The company FSOs will refine, observe, trigger or fire the targets assigned to their respective company commanders—tasks that are all part of the TF's "fire planning" process.

Which brings up another point. The authors imply that company fire supporters in general and company FSOs in particular are responsible for the TF's fire support. That's incorrect; TF company

commanders are responsible for executing the targets. The maneuver or combined arms commander is responsible for integrating all assets, not just maneuver. And the company commander needs his company FIST to help him fulfill his responsibilities.

The company FSO and FSNCO [fire support NCO] coordinate the commander's fire support. In this role, they're primary players and subject matter experts in the fire support arena, and they must have the skills and knowledge to synchronize fire support in the company/team fight. The company FIST must function as an integral part of the maneuver company, and habitual relationships and tough, realistic training accomplish this; pooled resources at the TF level don't.

Top-down fire planning *necessitates* refinement of the fire plan to achieve synchronization—the TF depends on that refinement to make the most of its limited fire support. In the defense, the TF FSO relies on the company/teams to refine the target location. In the offense, refinement comes as a result of the reconnaissance effort, updated situational templates,

changes to the scheme of maneuver and, finally, input from the company/teams.

The authors also state that targets designated by the TF do very little in support of the company/teams. This is not a fire support problem but a synchronization/staff planning problem. Every target on the battlefield has three things: a purpose, a shooter (primary and backup) and an event or trigger that causes that target to be fired. If the purpose of every target does not directly relate to the success of the overall

mission, then it probably was planned in a vacuum, not as part of an orderly staff planning process as our doctrine dictates.

The bottom line is that our doctrine, as is, works. Consolidating FISTs at the TF level would take away assets critical to the mechanized company/team as part of that team. Applying current doctrine doesn't guarantee success, but it does provide the framework for success on the battlefield.

Though we disagree with the authors' idea for change, we agree that *Field*

Artillery must continue as our forum for professional discussions about how to change; after all, the top-down fire planning process broke first in *Field Artillery*.

MAJ James M. Waring, FA
MAJ Boyd D. Gaines, FA
Small Group Instructors
Fire Support and Combined Arms
Operations Dept
Field Artillery School, Fort Sill, OK

Response to "Is Fire Support Too Hard or Just Very Tough?"

I read with interest Infantryman Colonel [Thomas F.] Metz's article in the February 1994 edition. The article addresses why fire support needs improvement, outlines a 1st Infantry Division (Mechanized) [Fort Riley, Kansas] program to accomplish this improvement and shares lessons learned during an NTC rotation [National Training Center, Fort Irwin, California].

I applaud the author's recognition of the importance of fire support and his unit's specific program to sell fire support to maneuver leaders while training all personnel to get better fire support results on the battlefield. Combined arms commanders must take ownership of the entire battle—not just the maneuver portions with which they are the most comfortable.

I'm troubled that a generation of maneuver leaders may be convinced by

their NTC experiences that fire support doesn't kill on the battlefield at rates "commensurate with resources invested." While training at the NTC is some of the best the Army has to offer, results achieved by fire support will always be limited by the nature of that training.

This is true for several reasons. The NTC is a heavy maneuver world. You won't see battles won there by air support because doing so would severely limit maneuver training. The full range of artillery effects isn't depicted, so artillery doesn't get credit for mobility, fire control or communications kills. Counterfire play is limited because it's normally a division's battle. Reinforcing artillery is limited, so massed fires are less than they might be in a combat situation. And try as we might, we can't get a laser beam to follow an artillery trajectory, so indirect fires replication is inferior to direct fires

replication. It's hard to believe in something you can't fully see, hear or feel.

In no way am I criticizing the work of the many fine observer/controllers (O/Cs) at the NTC. I know they are working hard to improve fire support training and indirect fires replication. My point is this: our troops and leaders are learning many good lessons at the NTC, but if they're learning that what they see of fire support is all they'll get in a real-world fight, then they're learning the wrong lesson. Look to a different desert for a more realistic view.

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Response to "A Russian Analysis of Warfare Leading to the Sixth Generation"

Major General (Retired) Vladimir I. Slipchenko's vision of achieving victory without occupying enemy territory (October 1993) demands challenge. Major General Slipchenko asserts a Sixth Generation power will be able to defeat a Fourth Generation power without the need for "soldiers' boots to tread on enemy soil...just by conducting offensive aerospace and electronic warfare operations and winning the data fight." At best, a Sixth Generation power will be able to achieve a tactical and operational victory and a strategic draw without occupying the enemy's homeland and eliminating the hostile political infrastructure.

Although he says the space-based, high-tech capabilities to wage war at the

Sixth Generation will emerge at the turn of the century, that's only a few years away. Historically, victories in modern wars demonstrate the necessity of occupation and political cleansing; examples are World War II, Vietnam, Panama and Grenada. In World War II, the Allied Powers occupied Nazi Germany and "de-Nazified" both the BRD [Bundesrepublik Deutschland] and the DDR [Deutsche Demokratische Republik]. The North Vietnamese Army occupied the South and massacred or re-educated the South's politicians. Panama ended with Noriega removed from power at gunpoint and imprisoned in Florida. In Grenada, coalition forces quickly reinstated the legitimately elected government.

Cases of tactical and operational victories, although ending in protracted, strategic draws and stalemates, abound: Korea, Afghanistan, Libya and Iraq. Forty years have passed, but the Korean conflict still festers because neither the North nor the South expunged the enemy's political infrastructure. In spite of their technological superiority, the Soviets failed to achieve strategic victory in the mountains of Afghanistan by failing to exterminate the Muslim rebel leaders. Though America's naval and air Sixth Generation ("...though not yet in the fullest sense") forces crippled Kadafy's Fourth Generation forces, the Libyans continue conducting low-level conflict (through terrorism) against the West. Hussein and his Baath Party flauntingly

continue rearming after their devastating operational defeat against (the almost) Sixth Generation UN coalition.

In conclusion, Major General Slipchenko talks of the international need "...to find new solutions to unique problems of national sovereignty...." He implies a dream of a coalition between the United States, Russia and other Sixth

Generation powers to find those new solutions. Such a coalition would achieve only a temporary peace.

The solution now and in the future is not only to defeat an enemy's military capabilities, but also to expunge the political power that inspired the use of those capabilities. And the latter is achieved only by occupation. Realists

know strategic victory and permanent peace depend upon the infantryman's boot crushing the enemy's soil and the infantryman's bayonet bringing the tyrant to justice.

MAJ(P) Glenn L. Morton, FA
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Response to "Fires and Maneuver: The End of Splendid Isolation"

The authors of "Fires and Maneuver: The End of Splendid Isolation" [Major General William M. Boice and Colonel Christopher C. Shoemaker, February 1994] have put the proverbial finger on a problem artillerymen have discussed for years: the difficulty of training realistically to employ fires to maximum effect in a peacetime environment. Loud and enthusiastic "Amens" can be expected from congregations of fire supporters who have long endured deep frustration at our Combat Training Centers (CTCs)—the National Training Center [Fort Irwin, California], Joint Readiness Training Center [Fort Polk, Louisiana] and Combat Maneuver Training Center [Hohenfels, Germany]. The article strongly argues that even though the CTC experience has had a significant, positive impact on the combat readiness of our Army, it is not an accurate reflection of how the American Army has ever fought its wars—to include the most recent one in Southwest Asia.

The problem, according to the authors, is so pervasive that even our terminology

("fires and maneuver") and the format of our orders ("scheme of maneuver") have affected the way we think and have caused us to train with a bias toward "maneuver" (meaning armor and infantry) engagements and the direct fire battle. The result is a failure of commanders to understand and properly employ fires in training—a dangerous violation of the fundamental principles of peacetime preparation for combat.

The American Way of War has always lavished artillery, aviation and air support on the enemy before maneuvering any soldier into direct fire range. Our philosophy always has been to expend maximum firepower to save lives, and we went to extraordinary lengths to avoid casualties in Operation Desert Storm. In contrast to the swashbuckling battles at the National Training Center, in Desert Storm even our cavalry regiments had attached multiple-launch rocket system (MLRS) batteries and used deliberate and generous artillery preps before closing with the enemy. Maximum firepower and minimum casualties always will remain a principle of

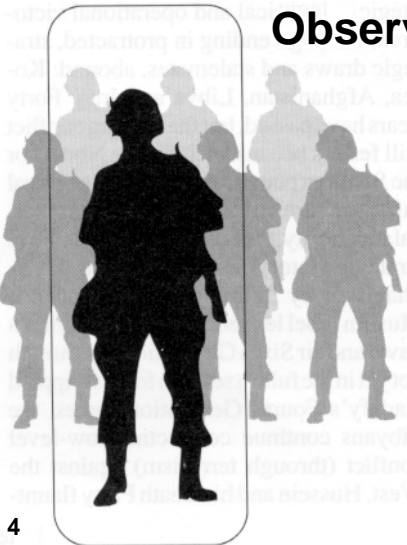
warfighting for the American Army, a fact expressly stated by the Army Chief of Staff in the *1993-94 Army Green Book*.

Changing and clarifying terminology, improving the technology for assessing fires at the CTCs and developing innovative ways to train that are consistent with battlefield reality and the American Way of War are all sorely needed revisions. If anything, the depth of the problem may be understated. Even the term "maneuver" seems hopelessly lost in misunderstanding. Is it a ground gaining arm? Is it a principle of war? Is it an element of combat power? The answer is "Yes" to all three. Unfortunately, trying to clean up terminology may only cloud the real issue—we need to train as we expect to fight.

This extremely important article will find little disagreement among the readership of *Field Artillery*. The audience, however, needs to be broader. This message needs to be heard and understood by the whole spectrum of joint and combined leaders. By printing the article in *Field Artillery*, I'm afraid we're preaching to the choir.

LTC Thomas G. Waller, Jr., FA
Deputy Director, Gunnery Department
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Observations of a CGSC Selection Board Member



I was a member of the board selecting officers for the 1994 Command and General Staff College (CGSC) Class at Fort Leavenworth, Kansas. In this letter, I share a few observations that should be of interest to you and highlight some of the components of your file that must be in order to ensure you're properly presented to a board.

Photo. The first item board members look at when they open a file is the officer's photo. Your photo creates that all important first impression; therefore, it's extremely critical the photo "sells" you to the board.

Too many officers still have black and white photographs in their files. They're acceptable but don't have the impact of a good color photo; the difference is like night and day. A black and white photo really doesn't indicate you're putting your "best foot forward."

There are also too many old photos in officers' files that don't show current rank, awards and appearance. Frankly, old photographs raise a question in the minds of board members: Is the officer trying to hide something? This is especially true if the officer tends to be on the heavy side. As with black and white photographs,

DA Photo Checklist

- Take a color photo for the board.
- Immediately update your photo after each promotion.
- Watch for shade differences between your jacket and trousers, wrinkles and award placement—if flawed, they're more obvious in color.
- Wear a long-sleeved shirt.
- Wear only official awards or decorations, pinned on in the right sequence.
- Use edge dressing on shoes, to include toe bottom.
- Have a proper haircut.
- Avoid mustaches.
- Take a buddy along to double-check your uniform.
- Show your photo to a mentor before submitting it.
- Ensure your shirt has the proper neck size.

Field Artillery Officers Assignment Branch
Alexandria, VA

old or missing photos don't reflect a best effort on your part.

You should check your photo closely before forwarding it to Field Artillery Branch; the photo should show you at your very best. It's not a bad idea to have a buddy or mentor provide his impression, as well. Board members who see rumpled uniforms, uncombed hair, medals out of sequence, cowlicks sticking up, untrimmed moustaches, etc. in photos quickly decide the officer is unkempt, doesn't pay attention to details and isn't motivated enough to "get it right." Your photo will be your "best friend" or your "worst nightmare," and it's up to you.

Duty Description. Your duty description in Part III of the officer efficiency report (OER) is one of the initial entries board members review when they scan an efficiency report. It's very important the description accurately portrays your job and the level of responsibility associated with that position. Remember, most board members aren't Field Artillerymen, so avoid jargon and acronyms unless they're common throughout the Army.

Board members tend to key on duty descriptions that include such words as "commander," "leader" or "chief"—words that indicate the officer is in charge of something. It helps if you can quantify your job in simple, clear terms, allowing members to grasp the span of your responsibilities. For example, you might write, "Responsible for 152 soldiers" or "...\$8 million of equipment," as part of your description. Board members readily and clearly understand these statements.

Height and Weight. Board members home in on an officer who looks heavy in his photo. Their first instinct is to review Part IV of the OER for the rater comments regarding weight compliance. Next, they track the officer's height and weight over time. Board members

become very suspicious of an officer who "meets the standard" according to Part IV and yet gains 30 to 40 pounds over the course of two or three OERs. Height fluctuations also catch their attention. If suspicions are raised too high, many board members will deduct points from the file.

You should check your OERs to ensure your height remains constant and your weight is correct and in agreement with the height and weight data on your officer record brief. Raters can help heavy-looking officers who meet the height and weight standards by offering favorable comments in Part IV. Statements regarding an officer's high state of conditioning or participation in athletics reassure board members.

Letters to the President of the Board. Many officers send lengthy letters to the board that have little or no impact on board ratings. Letters about new awards have very little influence, unless the award is a Bronze Star for Valor or higher. Before writing a letter to the board, get guidance from your branch manager on content and appropriateness.

Battery Command OERs. These OERs are exceptionally important for promotion and CGSC selection, and they tend to provide the clearest common measurement to compare officer potential. At the captain and major levels, they're the most heavily weighted OERs in an officer's file, followed by reports subsequent to command.

Board results show that center-of-mass officers get promoted while many with strong center-of-mass files also go to CGSC. "Strong" describes a file where a few "home run" reports are sprinkled among the center-of-mass OERs. To make the CGSC cut, you must have at least one above-center-of-mass battery command OER.

Senior Rater Input. Far too many

Field Artillery senior raters fail to communicate a clear "picture" of their intent to the board members. The top box is too often used as center of mass, and senior rater narratives are frequently too vague and verbose. These kinds of reports lack credibility with board members and end up hurting the rated officer.

The best advice is to use a single box center of mass to portray the officers who are "with the pack." The "2" box best serves that purpose. The "1" box then represents officers "ahead of the pack," while the "3" box reflects "behind the pack."

Regardless of the box marked, the words in the narrative must agree with that box. Overly glorious words for a 3 box lack credibility, as do "ho-hum" words in support of a 1 box. The right words are especially essential for those senior raters who have immature profiles or large rated populations.

Short precise comments about the officer and his or her potential send the clearest message to the board. A statement such as "best battery commander in the battalion [or brigade]" or a qualitative relative ranking are extremely useful in communicating the "best qualified" officers.

The Bottom Line. The Field Artillery looked to be in great shape. Members of the CGSC selection board were highly impressed with the quality of Field Artillery officers and left with the feeling that the future of the Branch and the Army is in good hands.

You're obviously in good company in a very competitive business. As this letter indicates, your success in properly presenting yourself to Department of the Army boards rests largely in your own hands.

COL Thomas L. Brown, FA
Commander, FA Training Center
Fort Sill, OK



Brigadier General Lawson W. Magruder III, Commander of the Joint Readiness Training Center, Fort Polk, Louisiana

Drill the Basics Under Diverse Conditions

Interview by
Major Robert M. Hill, Editor

Q Please briefly describe the mission of the Joint Readiness Training Center (JRTC) and what makes it unique.

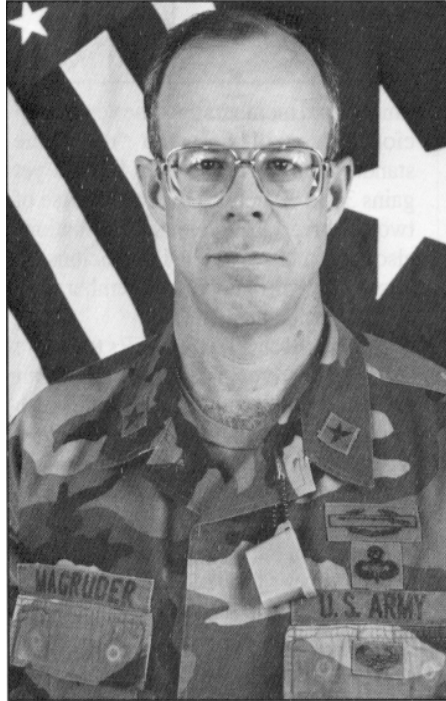
A The JRTC provides advanced training for light forces in the Total Army at the brigade task force level and below with a lot of joint force play—Army, Air Force, Navy and Marines. The focus is on contingency operations: rapid deployment and then tactical operations under the most realistic conditions, from operations other than war [OOTW] through low- to mid-intensity conflict.

Now, having said we train light forces, every rotation except the ranger rotations includes a heavy company team attached to the light forces. We're also beginning to include heavy artillery units in our rotations.

A rotation includes deployment from home station by STRATAIR [strategic air] to an intermediate staging base at England Airfield, adjacent to Alexandria [Louisiana] for light forces or all the way into the "box" [maneuver training area] for airborne units. Once at the intermediate staging base, light forces deploy into the box by C-130 aircraft (either actual or notional) or Army helicopters.

At the JRTC, the enemy is everywhere on the battlefield. Our scenarios are force-oriented rather than terrain-oriented, which results in a larger number of engagements—some 600 in the normal 11-day rotation. Also, we have a corps of civilian role players who occupy villages, sell items to soldiers, conduct demonstrations—perform a whole range of activities soldiers are likely to see in OOTW and low-intensity conflict.

The JRTC is a resource-constrained environment, especially when it comes to artillery and mortar ammunition. Both the Blue Force and OPFOR [opposing force]



have to watch their CSRs [controlled supply rates] because air and ground resupply procedures are replicated. If a unit runs out of ammunition, it *stays* out until it works through resupply.

During the 11 days, operations at the JRTC are continuous with no peaks and valleys. The battlefield may be "hot" even while we're conducting AARs [after-action reviews]. We conduct AARs down to the platoon level but also have a sergeant first class O/C [observer/controller] with each squad to observe its actions and provide immediate feedback.

Our relatively flat terrain has dense vegetation and some rolling hills, making it restrictive and creating unique challenges, especially for fire supporters. With fewer areas suitable for occupation and the emphasis on 6400-mil firing, Field Artillery units must select firing positions carefully. The terrain's lack of commanding features complicates selecting trigger points for indirect fires.

It also presents a challenge for observers to adjust in danger-close missions.

Q Are maneuver (combined arms) commanders at the JRTC effectively executing fires integrated with maneuver?

A Results are mixed. Oftentimes it's a function of how long a commander has been in command. We like to see a commander come here in his first six months of command; it helps to magnify his training experience. He goes away understanding where he needs to improve and what skills he needs to sustain during his next 18 months of command.

One thing that's helped in this area is our Leaders Training Program. About three months before a rotation, we bring commanders to Fort Polk and focus on synchronizing battlefield operating systems [BOS]. During the six days of the program, commanders meet with the senior fire support O/C and his staff who brief them on fighting with fires, synchronizing fires and conducting fire control exercises using Janus. When commanders return for their rotations, they're more confident about their ability to integrate fires with maneuver.

On the positive side, we're pleased with commanders' guidance for fire support. Battalion and brigade commanders are doing well at determining the *how*, *when* and *what* of fire support and expressing them clearly in their guidance.

Another positive trend is that targeting meetings are being held daily. Commanders and staffs are pulling together and deciding where the task force's efforts should be focused in the next 24 hours.

There also has been great improvement in commanders recognizing the importance of getting the Q-36 radar into the theater of operations early for counterfire. The radar is essential to protect early-entry forces in an environment where 360-degree operations are the norm.



We continue to have challenges in delivering timely, accurate fires in support of maneuver forces in close contact. It's actually a double-edged challenge: the need to continuously track friendly force locations while bringing fires to bear against fleeting targets. It's the same challenge we faced in Vietnam.

The synchronization of all fire support assets—I'm not talking just artillery; I'm talking mortars, naval gunfire [NGF], close air support [CAS], attack helicopters—also remains a challenge. Commanders and staffs sometimes get too complex in their planning. Integrating fires with maneuver is complex enough, so the simpler the plan, the better. There's a tendency, too, to lock in on the execution matrix and not "go with the flow" of the operation. It gets back to knowing where your forces are and where the enemy is—battle tracking.

One way we measure integration success is the number of OPFOR casualties from fire support. It's low. We're not getting the results we should. To improve, commanders need to concentrate on honing battle drills. They and their fire supporters need to train closely and routinely together at home station, especially in employing fire support during close contact. The JRTC is not the place to integrate fire support and maneuver fully for the first time.

Allocating fire support resources, using planned fires and synchronizing fires in the defense also need improving and can be trained through simulation using Janus or BBS [battalion-brigade battle simulation].

Q *You've mentioned battle tracking several times. Is it an area in which units need to improve?*

A Definitely. Units tend *not* to update locations or track civilians closely, but they can't afford not to. Commanders from the platoon all the way up to brigade must keep their heads in the game, must ensure control measures are updated and

disseminated, checkpoints used and reported and units tracked continuously.

Accurate, timely battle tracking can mean the difference between success and failure. If friendly units aren't tracked well at the battalion level, their location won't be accurate at the brigade level. In low-intensity conflict and OOTW, the kinds of scenarios we run at the JRTC, there are no front lines. During a normal rotation, we have 4,000 to 6,000 soldiers at the JRTC, many operating at the platoon level and below—a lot of moving elements to track. And uncertainty about where our forces are delays clearance of fires. Meanwhile, the OPFOR has packed up and left.

Civilians also have to be tracked, especially in delicate OOTW with very restrictive ROE [rules of engagement]. Units can lose a war because of civilian casualties. Including civil affairs [CA] units is critical to our business as is the need for liaison teams; they give us the "eyes" to track villagers, relief organization workers and the like—disparate groups.

In BCTP [Battle Command Training Program, Fort Leavenworth, Kansas], the lowest level unit tracked is the brigade, sometimes the battalion. At the JRTC, units have to track friendly forces by platoons or they'll have fratricide. Units have no choice—they must battle track and do it well.

Q *One observation from the JRTC is that firing batteries need more training on survivability skills. What trends are you observing in this area?*

A Units have to do better. Mission Number One for the Field Artillery is to support maneuver forces. Mission Number Two is to survive. If units don't do Number Two, it's hard to do Number One. And batteries won't have infantry to protect them—they must defend themselves.

The trend is to go back to the firebase defense of Vietnam. Given the dense,

restrictive terrain and the requirement for 6400-mil operations, artillerymen have to dig fighting positions—individual and crew-served. They have to patrol to keep snipers and ground attacks away from the battery position. They have to put out claymore mines and install concertina wire. Training them to do all these things is NCO business.

Field Artillerymen have to work with the engineers. The battery commander has to know the exact dimensions of the battery's position and where he wants everything. We've seen, for example, units push out and construct a berm and then dig fighting positions inside the berm. Well, guess what? The OPFOR uses the berm; they get behind it and peck away at the unit.

Finally, batteries have to be prepared to defeat an ambush while on the move. Artillerymen may have to dismount their vehicles and engage the enemy.

With lots of minefields, units need well-trained, observant drivers who look for tell-tale signs of mines on the battlefield. Every rotation, we have too many vehicles destroyed by mines.

Q *Joint and combined arms operations are the norm at each of our CTCs, but the JRTC has been on the leading edge of joint training. Please describe how you incorporate joint fires.*

A We work joint fires hard for two reasons. Forced entry operations may preclude using artillery; it may not be on the ground yet. Therefore, units rely on CAS, NGF and Army aviation during this phase. Second, throughout operations, light forces have less organic firepower and must compensate with other means, must rely on joint fires to a greater extent.

We try to get an AC-130 or two for every rotation. CAS planning and employment works well, although we need to improve our A²C² [Army airspace command and control] planning for deconflicting indirect fire systems and aircraft, including Army aviation.

Naval gunfire, although notional, is consistently employed to engage high-payoff targets by pushing Marine fire control (FIC) teams forward in reconnaissance or counter-reconnaissance roles. A Marine ANGLICO [air and naval gunfire liaison company] participates in nearly every rotation. We're seeing the ANGLICO fall under the FSO and being fully integrated, as are the FIC and SALT [supporting

“The trend is to go back to the firebase defense of Vietnam. Given the dense, restrictive terrain and the requirement for 6400-mil operations, artillerymen have to dig fighting positions—individual and crew-served.”



arms liaison team] at the company and battalion levels.

Our FSOs and artillery lieutenants and captains have to integrate all these assets. They do at the JRTC.

Q *What is the JRTC doing to accurately replicate the effects of indirect fires and their destructiveness?*

A First, we work with the Field Artillery School at Fort Sill on the BDA [battle damage assessment] tables to make sure we're giving full credit where credit is due. If we believe that BDA for a certain type of target is understated, we let the school know.

We're going to a centralized BDA control system and communications net that will speed up BDA. Currently, O/Cs assess battle damage on the ground using BDA tables. A firemarker [person who marks the target with simulators] has to move to the location of the fires' impact, which takes time. The BDA tables are also cumbersome and time-consuming.

With the centralized system, O/Cs will call a computerized BDA "clearinghouse" and rapidly obtain BDA. Unlike the BDA tables, the computerized system will include suppression effects.

For well over two years, we've employed a computer program for the Q-36 radar, developed by an outstanding Redleg, Sergeant First Class Joseph McNeely, that replicates the acquisition signature of all rounds on the battlefield. The program also follows the actions taken by the radar crew and tracks any errors it makes. For example, the program can tell where the radar is oriented and why certain targets weren't picked up. It's so good, we've exported the program to the NTC [National Training Center, Fort Irwin, California].

I get briefed daily on how well the Q-36 has performed in the last 24 hours. I also get briefed on how well our firemarkers are doing. Their goal is to mark the effects within two minutes of the call for fire. We

track that, and they're doing quite well here at Fort Polk.

When our O/Cs detect Blue Force or OPFOR errors in any of the five requirements for accurate predicted fire, the firemarker applies a 75-meter target location error [TLE]. The error is removed when the unit either registers or adjusts its rounds onto the target. In the near future, we'll have a computer program that will give us the grid upon which a round would impact, allowing the firemarker to mark this exact spot rather than applying a generic 75-meter TLE.

SAWE-MILES II [simulated area weapons effects-multiple integrated laser engagement system] is being worked right now at the NTC. We'll eventually have it at the JRTC. SAWE-MILES will enhance replicating the kill radius of indirect fire systems tremendously, but it can't replicate all battlefield effects, such as fire, concussion, etc. We'll still need firemarkers for those.

We've also been working hard to improve the pyrotechnic side of fires replication. We can't burn down trees, but we can have flames and other effects on the objective. Because all attacks are at night, flames on the objective are not only more realistic, they also help the unit get oriented.

Q *The JRTC is at the forefront of training OOTW, which is now fundamental to our doctrine. Based on your experiences in Operations Hurricane Andrew Relief and Restore Hope, what tasks are important in training for OOTW?*

A Overall, units must continue to focus on the basics. We have to fire responsively and accurately with our indirect fire systems and maneuver, integrate and maintain our systems. Training the basics will carry the day at the tactical level.

In addition to the basics, there are some tasks and conditions commanders can integrate into normal METL [mission-essential

task list]-based training that complement success in OOTW, particularly peace enforcement operations.

Drivers must be trained and disciplined. They must be able to react quickly to various situations safely. We need to improve drivers training and tactical convoy procedures and drills, to include counter-ambush techniques.

We must be proficient in MOUT [military operations in urban terrain]. Tremendous teamwork and basic skills are required for soldiers to work in buildings and narrow alleyways. We're serious about urban warfare training at the JRTC; within 18 months, we'll have a world-class MOUT town.

All platoon leaders need to know how to call for and control attack helicopters. During peace enforcement operations, we've found there must be a tight link between the air battle captain with the scout weapons team in the air and leaders on the ground.

We need to improve mine and countermine tactics and techniques. With the proliferation of mines throughout the world, they'll soon be the primary killer on the battlefield.

Our conventional commanders need to understand and work more closely with SOF [special operations forces]—SOFA Detachments, CA and PSYOPS [psychological operations]. This marriage *must* occur. We can't succeed on the modern battlefield without these combat multipliers.

I've already talked about civilians dispersed throughout the battlefield; we must understand them and know how to manage them.

We have to stretch our communications capabilities to the max, understanding all systems available. We must have redundant comms systems and plan to use them extended distances between higher and lower headquarters.

Critical to peace enforcement operations is human intelligence [HUMINT]. Soldiers at all levels must be able to render a coherent SALUTE [size, activity, location, unit, time and equipment] report. *Everyone* is an intelligence gatherer.

We need to continue our emphasis on training and certifying combat lifesavers in every squad. We must conduct advanced medical training for not only our medics, but also our combat lifesavers.

In terms of live fire, we need to focus training in two areas: clearance of trench lines and counter-ambush drills. We have some outstanding live-fire lanes for clearing

“ The Field Artillery's primary mission—to provide fast, effective fire support when necessary—remains unchanged. But the conditions under which you accomplish that mission change with the military operation. ”



“ The bottom line is Field Artillerymen must know the basics cold and be versatile. ”

trench lines and villages and countering ambushes at the JRTC. They easily can be exported to home stations.

Staffs have three primary functions in OOTW. First, staffs must be able to develop a clear mission statement with a task, purpose and defined end-state. Second, staffs must gather information continuously and feed that information up and down the chain, as appropriate. Finally, they must carefully and efficiently track the battle.

Q *What are some of the challenges Field Artillerymen face in OOTW, especially in peace enforcement missions like Somalia?*

A The Field Artillery's primary mission—to provide fast, effective fire support when necessary—remains unchanged. But the conditions under which you accomplish that mission change with the military operation. You must be able to fire 6400 miles and be highly accurate—every round fired could have political consequences. The close proximity of fires to friendly civilians and soldiers means one stray round could unhinge the entire operation.

Peace enforcement operations are particularly vexing, given the constant intermingling of civilians and belligerents and the inability to clearly distinguish between the two. An ally today can be an enemy tomorrow. In such an environment, understanding



the ROE is paramount. Fire supporters must develop worst-case scenarios and rehearse the appropriate fire support actions.

Speedy clearance of fires in response to acts of aggression, which often come with little warning, is also critical. Again, this hinges on battle tracking—having the confidence your fires won't cause collateral damage.

In peace enforcement operations, Field Artillery or fire support can be used as a show of force. Appearances are important but can complicate a situation. In an environment where there are many belligerents, as in Somalia, you must avoid pointing your cannons at any *single* belligerent.

In Somalia, we found firing non-lethal ammunition, such as illumination, to be a great deterrent. But even non-lethal ammunition can have collateral, even deadly, effects. Early on, we had an illumination canister go through the roof of a home and kill a young child. Fire supporters must war-game to avert such possibilities.

In addition to fire support coordinators, Field Artillery commanders must be land and security managers in OOTW. Again, this is reminiscent of Vietnam. Artillery firebases make excellent staging areas from which other units can conduct operations. During our November rotation that had a peace enforcement scenario, a Field Artillery battalion from the 82d Airborne Division [Fort Bragg, North Carolina] coordinated the entire base cluster defense around our airfield.

Field Artillery units also will serve as logistics supporters. You have a high density of vehicles, many of which you won't use in a static firebase. Maneuver commanders will grab these vehicles periodically for patrolling, liaison, convoys and other requirements.

Unique missions will be the norm. When 10th Mountain Division [(Light), Fort Drum, New York] troops first deployed to Somalia, we didn't take any artillery. But when we didn't have enough maneuver headquarters, the division artillery headquarters served as my combined task force headquarters in Kismayu, handling two maneuver units, including a Belgian unit. I was very impressed with our 10th Mountain Redlegs' ability to adapt to a complex, dangerous situation and provide outstanding command and control for our maneuver units. Also in Somalia, the artillerymen of the 3d Battalion, 11th Marines [Twentynine Palms, California]

served as infantrymen protecting the airfield in Mogadishu.

The bottom line is Field Artillerymen must know the basics cold and be versatile.

Q *What message would you like to send to Redlegs worldwide?*

A Training at the JRTC is not just for light infantry units; it's for all units. The multiple scenarios worldwide in which our Army could find itself employed—such as the peace enforcing operations part of our heavy 24th Infantry Division is involved in outside Mogadishu—means every unit must be prepared to accomplish any mission. That means heavy artillery units must know the survival techniques of light forces and be able to battle-track every platoon on any battlefield.

We have a motto at the JRTC: "Winning is Learning." If a unit is learning at the JRTC, if its competence and versatility are increasing, then that unit is a winner—regardless of the condition of the OPFOR when the unit leaves for home station. Our goal is for individuals and units to leave the JRTC far more competent than when they arrived—that means being more knowledgeable, skillful, disciplined and positive about accomplishing any task.

Competent, versatile Field Artillerymen will help ensure America succeeds in any future military operation.



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CMTC Tips for the Company/Team

by Sergeant First Class Steven C. Webster

The name "Hohenfels" evokes a whole gamut of experiences for nearly every soldier. Hate it, love it or just put up with it, the Combat Maneuver Training Center (CMTC) at Hohenfels, Germany, has an impact on everyone that ends up there. Every time in the "box" (the maneuver area), you're certain to learn something new.

Chances are as you read this article, fire support teams (FISTs) are "learning" with their company/teams (Co/Tms) at a Combat Training Center (CTC). Many come to the CTCs with new ideas or contrive unique solutions for situations in which they find themselves—some good, some not so good. After 30 rotations at the CMTC, I selected some tips for the Co/Tm FIST on safety, simulations, fire planning, rehearsals and the fire support execution matrix (FSEM) to share in this article. Though I gleaned them from experiences at the CMTC, they apply at all the CTCs.

Safety

The "final exam" for safety has real and lasting consequences. Safety can make your rotation in the box a learning experience or a very personal disaster.

Your Co/Tm will receive a safety briefing at the initial linkup with the CTC observer/controllers (O/Cs). Pay attention. The rules of engagement (ROE) in the safety briefing have been developed through hundreds of unit rotations, incorporating the lessons learned by soldiers—some the hard way—who came before you.

"We are in the business of killing people and breaking things," to repeat a well-worn (but true) cliché, and realistic training in that business is inherently dangerous. Training realism gives us the confidence and expertise needed for war. By practicing tasks when we're scared, stressed, tired and in unfamiliar surroundings, we probably come as close to combat conditions as we can without killing or maiming. At the same time, training under those conditions (much less in combat) can lead

to accidents. Here are some tips to help you prevent accidents.

Whether you're mounted or dismounted, *always* remain aware of the location of dismounted personnel and vehicles in your vicinity. Keep up with personal gear and sensitive items, and *wear your helmet* at all times. Constantly scan your local environment for hazards of any nature, and try not to disregard any element as "not dangerous." For example, too many soldiers ignore weather conditions until the conditions become so intense that they have to scramble to avoid problems.

When mounted, know the terrain limitations of your vehicle and abide by them. Wear your helmet and use available restraints—make sure everybody else does. Keep loose gear and equipment stowed and fastened down. Pay particular attention to how securely hatches are fastened. *Never* ride on top or outside of a moving vehicle.

Slow down during limited visibility and inclement weather. The faster you go, the less time you have to react to the "surprises" built into the CMTC. There are too many dismounted personnel, vehicles and unforgiving terrain features in the box to drive "blind."

Mud, or "splodge," makes driving even sure-footed high-mobility multipurpose wheeled vehicles (HMMWVs) and tracked vehicles an adventure, day or night. It's also challenging to try to look through that splodge on your windshield or mirrors. Take the time to clean windshields, mirrors and lights daily and during pre-combat checks.

At all costs, avoid stopping on busy tank trails, particularly during limited visibility. Even at only 15 to 25 miles per hour,

most tactical vehicles need a considerable distance to stop. If you must stop, slowly pull well off the road to safeguard you or your vehicle from being hit. But take care not to drive into ditches and splodge pits throughout the training area.

When dismounted, *stay away* from armored vehicles. CMTC ROE dictates standoff distances of 15 meters for dismounted and 50 meters for mounted engagement simulation exercise (ESX) players. O/Cs will normally "kill" violators of these distances—without discussion. And don't assume you're safe from armored vehicles because you're in a wooded area. Many tank commanders have earned the nickname "Paul Bunyan" for their tendency to knock down trees while trying to escape direct and indirect fires.

If you must approach a vehicle on foot, make sure the driver or vehicle commander can see you. Take extreme care climbing up on any vehicle. The 21-ton turret of the M1A1 tank has a powerful, rapid traverse system that loses no speed when it hits a human body. Don't get between any vehicles, and stay away from the barrels and turrets, particularly the Hoffman devices (pyrotechnic simulators) on the tanks.

The last safety tip: *leave duds alone*. Hohenfels, like most training areas, has been used as a firing range for years, and duds have accumulated, been buried and washed out or otherwise excavated. Munitions are designed to explode, and even malfunctioning munitions will if you fool with them long enough. Don't bet your health (or life) that a malfunctioning munition will continue to malfunction, just to get a souvenir.

When you find a dud, report it to your supervisor and O/C and note the location; mark it with engineer tape, if possible. Mention it to your O/C again after a change of mission. The risk one dud presents to soldiers warrants whatever efforts are necessary to ensure it's disposed of properly.

Most accidents occur because established policies or procedures weren't enforced due to inexperience, inattention or carelessness. Safety doesn't come naturally; it takes *effort*. Adhering to and ensuring those around you adhere to policies and procedures are half the battle in eliminating unnecessary risks.

The other half of the battle is conducting risk assessment continuously—identifying and assessing hazards or thinking about what can go wrong in any situation and what you can do to prevent it. If you see an unsafe act or condition, correct it. If you have some doubts about the safety of an activity, ask an O/C.

Simulations

One of the first things your Co/Tm will do at the CMTC is participate in a simulation exercise at the Warlord Simulation Center using the battalion-brigade battle simulation (BBS) system. Here are some tips to help you during Warlord.

Get as much of the team involved as is possible. Make the most of the opportunity to exercise the team (and yourself) in the planning process, applying the Co/Tm's standing operating procedures (SOPs) and tactics and executing the Co/Tm's plan.

Ensure all your Co/Tm's targets are entered into your work station, if necessary.

Use the line-of-sight point-to-point function to verify that the "eyes" (observers) can see the Co/Tm's priority targets and trigger points.

Keep in mind that in most simulations you have to work at ascertaining the ground action. It's not unusual for an entire regiment to bypass a Co/Tm with no more warning than a printout reading, "1/C/1/21 plt OP [platoon observation post] reports vehicle noises vicinity grid 456565." If we ever get a simulation threat that can replicate the "thunder" of a passing battalion of armored vehicles, this won't be a problem. In the meantime, read the printouts and know which eyes can observe the grid.

When moving your vehicle, pay attention to the terrain, particularly if you're trying to escape direct fire. You can move more quickly around the contour of a hill than chugging straight over the top, allowing the enemy multiple grill-door shots. Swamps and heavily wooded areas will slow you down and can "damage" your vehicle if you're persistent enough. The maps on the screens are pretty close to standard 1:50,000 maps and have a wealth of information on them. Use them.

If you're going to be in a position for a while, enter the movement legs of a quick escape route into the movement function and store it by assigning a start time of a few hours later. Remember where the route goes. Then if you have to leave in a hurry, go back in and change the start time to the present to begin your movement immediately.

As training dollars decline and technology allows even more realistic simulations, you can expect more and more of your training to be conducted in simulations. Apply the tips I've presented and, when not training in simulations, hone those skills that simulations can't effectively challenge, such as mounted and dismounted land navigation and cross-country movement, limited visibility operations, communications and maintenance.

Fire Planning

Integrating maneuver and fire support planning at the Co/Tm level continues to be a problem at the CMTC. Too many times, the commander and fire support officer (FSO) come back from the task force orders briefing, climb in their respective vehicles, close the hatches and come up with separate plans.

The Co/Tm fire support plan must supplement the maneuver plan rather than interfere with it. To integrate the two,



The ROE for safety at the CMTC generally apply at the National Training Center (NTC), Fort Irwin, California. Here, a FISTV vehicle (FISTV) sits in the NTC desert with its hammerhead ready for lasing.

analyze the when, where, what, why and how of the commander's intent, based on the mission, enemy, terrain, troops and time available (METT-T) and guidance from higher headquarters. It's all spelled out in *FM 6-20-20 Tactics, Techniques, and Procedures [TTP] for Fire Support at Battalion Task Force and Below*, *FM 6-20-40 TTP for Fire Support for Brigade Operations (Heavy)* and *FM 6-20-50 TTP for Fire Support for Brigade Operations (Light)*.

FM 6-20-40 states, "The FSO must know *when* and *where* the commander wants fire support. He must fully understand *what* the commander wants in the way of effects, duration and timing. To truly understand the commander's intent, the FSO must know *why* the commander wants support. He also must understand *how* the unit direct fire assets are to be used so he can supplement, not interfere with, their employment" (emphasis added).

You need a clear understanding of what the Co/Tm's fire and maneuver plan is and where the greatest threat to that plan lies. You must be able to visualize how the Co/Tm's engagement area or maneuver will appear "on the ground" from the task force operations order and rehearsal. Sometimes this may seem difficult; work with the commander, who probably has the most experience with "ground truth." The task force FSO, as your mentor, also will help.

You have to "see" the battlefield the way the Co/Tm does, recognizing the effects of terrain on direct fire systems and maneuver forces and reinforcing or negating those effects with fires, where possible. The checklist in the figure on observation, cover and concealment, obstacles, key terrain and avenues of approach (OCOKA) was designed with this goal in mind. For the most part, the ideas for the checklist come from the FM 6-20 fire support series, the FM 71 Armor series and *FM 100-5 Operations*.

You must produce a consolidated Co/Tm target list, bouncing that list off the one the task force gave you. If targets critical to the Co/Tm fight are incorrectly located or missing, submit *refinements* to the task force's list. If there are complications, explain to the task force FSO why you need the target and get the Co/Tm commander to do likewise with his boss, if necessary. Be prepared to compromise and execute alternatives.

Plan to observe and execute each priority target using multiple sets of eyes,

Observation and Fields of Fire

- Will eyes be among the first to see the target(s)?
- Are dead spaces and covered approaches in the Co/Tm's direct fire plan targeted?
- Do eyes have a limited visibility plan?
- Will changes in the weather affect planned smoke targets or other munitions?

Cover and Concealment

- How exposed are you and your team?
 - Where will you rally if engaged?
 - Are you ready to cover the Co/Tm's assault or withdrawal with suppressive fires/smoke?
 - Have the commander and you discussed or war-gamed fire support actions on contact?
- Do the observation posts (OPs) have covered and concealed routes to/from positions, and are they visible from the engagement area (EA)?

Obstacles

- Will the Co/Tm maneuver through restricted terrain or choke points?
- Have the commander, engineer platoon leader and you discussed or war-gamed the hasty or deliberate breach?
- Did the commander, engineer platoon leader and you review and confirm obstacles emplaced?
 - Are the obstacles targeted and observed?
 - Have you confirmed the locations of the obstacles and their targets and trigger points?

Key Terrain

- Are intermediate, final and contingency objectives sufficiently targeted?
- Have you reconnoitered routes and assault positions for potential enemy OPs?
- Did you participate in the leader's reconnaissance of the EA and battle position?
- Are the potential enemy direct fire positions/OPs at the limits of Co/Tm direct fire range targeted?

Avenues of Approach

- Where along the approach (route/march, axis/attack) is the Co/Tm most vulnerable?
- Are enemy avenues of approach covered by fires?

The FSO must "see" the battlefield the way the Co/Tm does, recognizing the effects of terrain on direct fire systems and maneuver and reinforcing or negating those effects with indirect fires, where possible. This checklist was designed with that goal in mind.

preferably from different perspectives. Make sure observers are in optimum positions within the Co/Tm's formation or battle position. As always, consider the effects of indirect fires on direct fire systems.

One facet of fire planning that's frequently ignored or discounted is terrain. All too seldom, natural choke points and man-made obstacles are combined, targeted and observed. It isn't always easy to recognize the potential of restrictive terrain and reinforce it into a "killer" choke point that has the opposing commander screaming into his microphone while your artillery saws his company to pieces. But it can be done—many units have been

"killed" at those choke points at the CMTC.

The commander, engineer platoon leader and you should not only discuss the obstacle plan before its execution, but also review what *actually* was emplaced. You must ensure the task force FSO is aware of the difference between the initial obstacle plan and its final product. Consider requesting family of scatterable mines (FASCAM) or shifting preplanned targets to cover the inevitable "holes" circumstances will punch in the plan.

All obstacles should be observed, and each blocking obstacle or choke point should have a correctly positioned target. Be aware that combat engineers from all

armies enjoy "practicing" their skills by breaching unobserved obstacles.

During movement, watch for restrictive terrain along the Co/Tm's route of march. Terrain "compartments" usually present the opportunity for the enemy to easily construct "kill sacks." If your Co/Tm must move through a compartment, look for potential OPs and see if you can plan to suppress or obscure them.

Always be prepared to cover the Co/Tm's assault or withdrawal with suppressive fires or smoke during combat operations. After you've done it a few times, you'll learn you can "slice" an engagement area into manageable pieces with smoke, if assets are available.

Make the effort to limit the Co/Tm's piece of the fire plan to three or four targets. Maximize the use of targets already in the system. Too many targets slow the fire support system down, and as with any plan, the more structure and synchronization required, the more difficult it is to adapt it to changes in the battlefield situation.

The Co/Tm operations orders briefing and rehearsal are the best opportunities for the FSO to disseminate the fire support plan and clear up any misunderstandings. Consequently, the FSEM, target overlays, target lists and any other documents necessary should be handed out *before* the orders. The entire order, particularly the fires paragraph, will be less effective if the observers don't have fire support and maneuver graphics on their maps and maneuver and FSEMs in their hands. The later they get these, the greater the opportunity for confusion.

Fire planning must be continuous. Many good initial fire plans need to change as the operation progresses and more information becomes available. If the plan isn't working and you have a better idea, don't just sit there, *do* something about it.

Rehearsals

One of the best occasions to ensure everyone understands the Co/Tm's maneuver and fire support plan is the company rehearsal. If a terrain model or sand table is used, make sure the targets, their trigger points and fire support coordinating measures (FSCM) are represented. Their representation doesn't have to be anything fancy—just a card or piece of paper marked with the target number at the appropriate location on the terrain model and strings or twigs for the

linear fire control measures. Use your imagination, but make them visual representations easily understood.

At the appropriate phase or event during the "walk through" part of the rehearsal, orient the observers on the target and correlate it to the nearest target reference point (TRP), checkpoint or prominent terrain feature. Make sure the observers understand the engagement criteria and call sign and frequency of the fire support element (FSE) or fire direction center (FDC). Check the observers' positions in the Co/Tm formation or battle position. Ask yourself, "Will they be among the last to see the target/trigger point, or will they be so far forward they'll be too busy fighting to call in the mission?"

The idea is to ensure everyone has a clear understanding of where the targets will appear on the battlefield, who observes and fires what targets when, how they tie in to that particular fight and which platoon has priority of fires during each phase. If your Co/Tm has organic mortars, you'll want to discuss at least movement control, positioning criteria and priority targets during the rehearsal.

If a talk through "FM radio only" or "brief back" rehearsal is used, it will be more difficult for you to get the observers to picture the targets' and trigger points' positions on the battlefield and associate them with the conditions to fire. When these rehearsals were used at the CMTC, the observers often were confused when asked about elements of the fire plan during after-action reviews (AARs).

The task force fire support rehearsal is the best opportunity for you to understand all aspects of the fire plan, verify target locations and confirm you and the task force FSO are "in step." It's not a bad idea to "eavesdrop" on the brigade fire support rehearsal as well; you'll usually get a complete target list and some insight as to how your Co/Tm's fight fits into the brigade battle.

Rehearsals aren't just something we "have to do" at the CMTC; they're a critical phase of any operation to make sure all the steps in a plan are achievable. They're the most effective method of comparing everybody's concept of a plan, aligning all those concepts with the commander's concept and reinforcing the integrated concept through practice and visual aids.

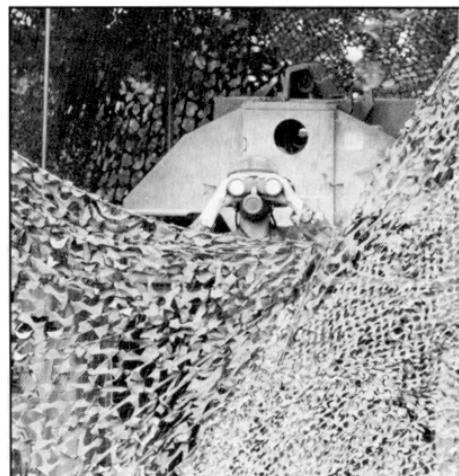
Fire Support Matrix

According to the FMs 6-20-40/50 and the 71 series FMs, the FSEM should be constructed in a simple "grid" system with letters and numbers for quick reference. On the other hand, FM 6-20-20 reflects the fact that many units now include in their FSEM the firing unit and/or the approving FSE's call sign and frequency, commander's intent, engagement criteria, high-payoff targets, mortar positions and even a target list with primary and backup executors listed on the back.

While matrices with all of this information are effective at the brigade or battalion levels, their use at the Co/Tm level is questionable. The

Co/Tm must balance the need to have all this information close at hand against the danger of delaying what should be a quick decision while searching through a "spreadsheet" looking for critical information. The best advice is to keep it *simple*.

You must give some thought to making technical information "more digestible" or formatting it so all can easily understand it. One clear method I've seen is to represent the engagement criteria as a statement associated with its consequences instead of as an abstract figure. The statement might be as follows: "If you see a company size of dismounts or four or more stationary vehicles, call FFE/IS [fire-for-effect/immediate



A FISTer puts eyes on target during training.

suppression] to D55 [Field Artillery battalion FDC]. For less than a company size of dismounts or fewer than four vehicles, call R55 [battalion mortar FDC]."

Fire support matrices vary widely in content and complexity. Many teams bring multiple acetate-covered fire support matrices to hand out at each Co/Tm operations order briefing. Other Co/Tm matrices are on a page in their "Battle Book" or on the back of their map boards. Some Co/Tms use a standardized fire support matrix with all or most of the information already mentioned, while others draw a simple grid on a corner of the map board. Whatever the format, the information must be clear and keyed to the maneuver matrix.

The phases or events on the fire support matrix *must* match the phases or events on the Co/Tm maneuver matrix. Some Co/Tms even use integrated maneuver and fire support matrices. If you use two separate matrices, both need to address the same events or phases to avoid confusion about when key events in the fire plan should take place.

Although the fire support matrix can help you rapidly disseminate or update the fire plan, you should never consider it a substitute for briefing the Co/Tm's leaders and observers on their slice of the fire plan. If time is short, a two-minute map board briefing in the back of a vehicle 10 minutes before leaving the line of departure (LD) is better than just handing out the matrix with no explanations.

The only way to know what will work for your Co/Tm is to develop, use and improve the matrix during home-station training. If your Co/Tm is seeing a new fire support matrix (or *any* standard operational document) for the first time during your rotation at the CMTC, you can expect difficulties.

Conclusion

Many soldiers come to the CMTC feeling they must win. The point of the CMTC is for soldiers to learn from their mistakes while playing "laser tag" rather than making those mistakes in combat and, perhaps, never having the opportunity to learn anything again.

At the CMTC, you'll face a competent, focused opposing force (OPFOR) that probably has executed the same mission over the same terrain at least once in the last 30 days. Contrary to rumor, the



A company FSO maneuvers his FISTV while providing lethal fire support at Grafenwoehr Training Area, Germany.

OPFOR won't be told where your unit is or what it's doing. Whether or not he finds all that out is up to you and your Co/Tm.

One of the things that impressed our Allies most during their familiarization and train-up rotations at the CMTC was our ability to discuss what went right and wrong in AARs. They thought that units taking responsibility for what happened without fear of recrimination enhanced the opportunities for learning.

When soldiers perceive the process has degenerated into a game of "Gotcha!" they become so concerned about making mistakes they often do nothing rather than take a chance at succeeding. The commander has the most influence on soldiers' perceptions through his reaction to mistakes and his approach in dealing with them.

Co/Tms and FISTs are complex mixes of machines that break and people who make mistakes. Through systematically planning in redundancies, training mercilessly and constantly maintaining our equipment, we can temporarily overcome these "laws of nature." It's more important that we learn from training why something went wrong rather than focus on the fact that something did go wrong.

Will knowing your TTP, implementing all these tips and coming to a rotation with a "learning" attitude guarantee your success? Absolutely not. Anyone who guarantees you'll succeed in the box will

probably try to predict the weather at the CMTC.

There are many things you can do to prepare for your rotation. Look at the take-home package and find out how your unit did last year at the CMTC. While this is only one of the sources for training assessment that drives your unit's training program, it can help explain why certain tasks are being emphasized, particularly for newly assigned personnel. Don't forget, the leader's responsibility is to execute centrally planned training, so the commander and staff can maintain their battle focus.

Finally, make the most of the mobile training team's visit. From the fire support O/C, find out what to expect at your CTC and what he'll expect from you.

See you in the box!

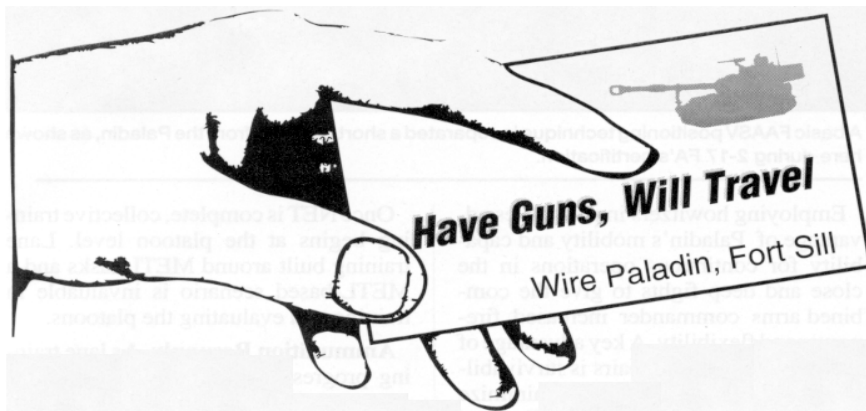
Unit motto: *we did not lose any*



Sergeant First Class Steven C. Webster was a Company Fire Support Team (FIST) Observer/Controller with the Grizzly Maneuver Team (Grizzly 27A) at the Combat Maneuver Training Center, Hohenfels, Germany, for more than 30 rotations. He has served in organizations throughout the fire support system, from the light infantry company FIST to a heavy corps fire support element (FSE). He also has been a tactics instructor and drill sergeant. Sergeant First Class Webster currently is an Operations Sergeant with the Directorate of Plans, Training, Mobilization and Security at Fort Belvoir, Virginia.

Paladin NET Lessons for Those Who Follow

by Lieutenant Colonel Sidney E. Riley



The M109A6 Paladin howitzer was named after Charlemagne's eighth century knights who were empowered to act with a great deal of autonomy on behalf of their emperor. Charlemagne selected and trained 12 elite knights to help him rule his empire. These knights, called Paladins, understood the collective goals of the empire and were free to act without supervision to achieve those goals.

So it is today with the modern Paladin. The mission to provide accurate and timely indirect fires remains, but gone is the visible "line of metal." As Major General William M. Boice and Colonel Christopher C. Shoemaker said in their article "Fires and Maneuver: The End of Splendid Isolation" (February 1994), "[the Paladin] is turning each howitzer into a land battleship, able to operate with far greater independence and responsiveness across the battlefield."

With greater independence comes greater responsibility and challenges. This article describes some of the challenges we faced as the first Paladin battalion—the 2d Battalion, 17th Field Artillery (2-17 FA), 212th Field Artillery Brigade, Fort Sill, Oklahoma—and the lessons we learned during new equipment training (NET) and follow-on collective training. These are lessons we hope will be useful to those units that follow. Worldwide fielding of the Paladin begins this summer, starting with the 24th Infantry Division (Mechanized) at Fort Stewart, Georgia.

METL Focus. Fielding the M109A6 howitzer didn't change our fundamental goal—to train to proficiency in the tasks of our mission-essential task list (METL). This goal kept us focused. Each day

brought changes to the way we did business—new tactics, techniques and procedures (TTP) and new logistics and personnel considerations. By staying focused on our METL, we reduced the turmoil caused by fielding the Paladin and the time needed to achieve METL proficiency with the new system.

Providing outstanding assistance in this endeavor was the NET Team (NETT) from the Gunnery Department of the Field Artillery School at Fort Sill. The objective of the NETT was to produce technically and tactically proficient howitzer sections and platoon operations centers (POCs). The NETT's highly qualified instructors did a superb job of training the trainers and battalion leadership and coaching, evaluating and certifying the howitzer and POC sections. Then, after our external evaluation, the 212th FA Brigade certified 2-17 FA as the Army's first Paladin battalion in September 1993.

Section Chiefs. There are several factors the battalion leadership should consider before starting the conversion to Paladin. The first is the experience level and adaptability of future Paladin section chiefs. The Paladin is a semiautonomous, computerized, radio-equipped weapon system. These three characteristics are not the norm in cannon artillery.

In semiautonomous operations, two section chiefs must work together to fight their howitzers as a pair, which could be a considerable distance away from the rest of the platoon. There are several characteristics to look for in a staff sergeant that indicate he'll make an excellent Paladin section chief. He must be self-reliant and technically competent.

He also must be tactically competent—know more than just "the gun." The staff sergeant must know how to employ the Paladin by analyzing the terrain and tactical situation and delivering fires while ensuring the survival of the pair. In short, he must think like an NCO above his pay grade—like a platoon or reconnaissance sergeant.

The Paladin section chief must understand and be able to adapt to new high-tech systems. In the Paladin, he has computer-driven menus for both technical and tactical operations. He also has a voice and digital FM radio. Radio communication skills are new to most cannoners and are vital to maintaining contact with adjacent howitzers, POCs and other battery leadership. Training personnel on radio operations and communications is a *must* before fielding.

The senior section chief of the pair must have exceptional leadership and communications skills to lead and fight the two howitzers as one "well-oiled machine."

MTOE. Another consideration is the effective date of the new modified table of organization and equipment (MTOE) defining changes in personnel and major items of equipment. In terms of personnel, the battalion should take a hard look at the military occupational specialties (MOS) to ensure the MTOE authorizes the right mix of support personnel.

We needed fewer of some support personnel authorized by our MTOE and more of others. For example, we were authorized too many communications specialists for laying wire, which we do considerably less of in Paladin than other cannon battalions; at the same time, we needed more maintenance and recovery personnel and could have used an additional position and azimuth determining system (PADS) team for survey. Note: 2-17 FA is a corps artillery battalion with an appropriate MTOE; divisional battalions receiving Paladins must carefully check their own MTOE personnel mixes.

The next step is to coordinate closely with the higher headquarter's logistics personnel or installation force integration office to ensure the new equipment arrives on time and that operators and repair personnel are trained on it before Paladin NET begins. This equipment includes FAASVs, M88A1 recovery vehicles and any additional radio authorizations, especially single-channel ground and airborne radio systems (SINGARS).

Lack of equipment will have a detrimental effect on NET and the supportability and survivability of Paladin. For example, the FAASVs need to arrive at least two weeks before the Paladins do; when the NETT trains Paladin, it trains tactics and operations with its FAASV. The FAASV operators must already know how to drive and maintain their vehicles.

Another example—the SINGARS need to arrive at least two months in advance. Before Paladin NET, section chiefs must not only know the technical operations of SINGARS, but its tactical employment as well. Prior to Paladin, our sections chiefs did not have to know how to talk on the radio. With Paladin, SINGARS is a vital tool for communicating with dispersed howitzer pairs in fast-paced operations.

Platoon Pairs. The NET Team conducts field training exercises (FTXs) and live-fire exercises (LFXs) under the 3x8 configuration, focusing on paired howitzer operations. Then training and employing pairs continue during the battalion's follow-on training.

There are several issues to consider when developing the howitzer pairs and in follow-on collective training. First, operations as independent pairs is a hard tactic for sections and platoons to learn, but it's the right way to train and make the most of the howitzer. Operations in pairs is more difficult to train because the pairs cover a wider area faster, which increases reconnaissance, command and control and resupply requirements. Pairs must communicate clearly between themselves and with the POC and implement directives in relative isolation. Also, moving pairs and using cover and concealment effectively are more art than science.



A basic FAASV positioning technique is separated a short distance from the Paladin, as shown here during 2-17 FA's certification.

Employing howitzers in pairs takes advantage of Paladin's mobility and capability for continuous operations in the close and deep fights to give the combined arms commander increased firepower and flexibility. A key advantage of employing Paladins in pairs is survivability; more dispersed howitzers minimize the ground signature and the effects of any counterbattery fires.

Training to employ Paladins in pairs, the most difficult configuration to master, doesn't preclude the battalion from employing Paladins as platoons, or even batteries, if the situation calls for. But like teenagers, once the pairs have tasted freedom and independence, it's hard to rein them back into platoon or battery operations.

Using one howitzer led by the pair's senior section chief and the second howitzer in a "wingman" formation greatly facilitates employing and moving the pairs. Consideration must be given to the working relationship and seniority of the paired section chiefs; the battalion may have to reorder sections to get the best mix of pairs.

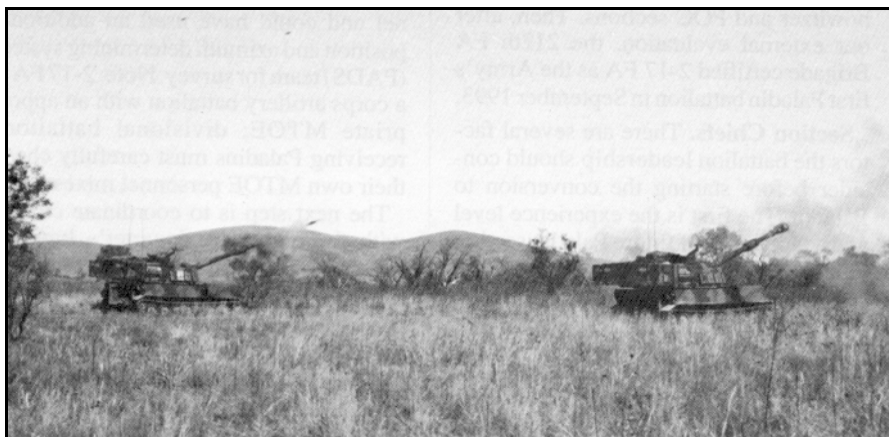
Once NET is complete, collective

training begins at the platoon level. Lane training built around METL tasks and a METL-based scenario is invaluable in training and evaluating the platoons.

Ammunition Resupply. As lane training progresses, attention is focused on other operational and logistical challenges the new equipment presents. For example, tracking ammunition isn't new, but the advent of a howitzer that's literally never out of action drives up the battalion's ammo use and makes tracking it more difficult. The Paladin battalion must carefully track its ammunition use/mix and adjust all forecasting, reordering and resupply to the platoons to account for the increased ammo consumption.

Units must make sure the expectations of maneuver commanders using Paladin fires for the first time are realistic. The commander may think *all* Paladin fires can hit targets at 30 kilometers; in fact, only when Paladin uses rocket-assisted projectiles (RAP) with M203 propellants can it range to 30 kilometers. Paladin unit commanders must constantly update their maneuver commanders on their ammo status, clarifying that a status of, say, 80 percent, may or may not include the special munitions needed to emplace mines or achieve extended ranges. Special ammunition—RAP, M203 propellants, family of scatterable mines (FASCAM), smoke, Copperhead, etc.—must be tracked separately.

Positioning the FAASV is also an issue. The basic FAASV positioning techniques are *mated* with the Paladin or *separated* from the Paladin (a short distance away, in an overwatch position or in a hide position). The positions are addressed in *ST 6-50-60 Tactics, Techniques and Procedures for the M109A6 (Paladin) Howitzer Section, Platoon, Battery and Battalion*.



During certification in the fall of 1993, howitzers of 2-17 FA fire at Fort Sill.

Careful analysis of the air, ground and counterfire threats along with the required volume of fires are key considerations in positioning the FAASV. The ability to rotate and rest crew members in the separated configuration and the longer time it takes to emplace and displace the howitzer's spade required in the mated configuration are strong arguments for the separated configuration.

But there's a major disadvantage in the separated configuration. If the FAASV is separated too far from the howitzer, it's unavailable to protect it from air and ground threats. For example, the platoon or pairs may be required to go forward of friendly lines to deliver long-range fires or special munitions. Because the Paladin operates buttoned-up the vast majority of the time, it counts on the FAASV to be its eyes and ears and employ its crew-served and anti-tank weapons against any threat. If the FAASV is too far away, it won't be able to alert/protect the howitzer—especially important in high-threat areas.

For the survivability of the howitzer, the FAASV should be separated only a short distance from it—10 to 15 meters—in most circumstances. In a Paladin battalion, the survivability of the pairs is a platoon responsibility; the battery defense perimeter no longer exists.

Movement Criteria and Battle Tracking. Because the Paladin moves more frequently and faster than other cannon artillery, survivability movement criteria and battle tracking are crucial. Movement criteria must balance the counterfire threat against the enemy's ability to visually detect the moving Paladin.

Survivability moves may be based on the number of rounds fired or the time in position. The best available information of the enemy's counterbattery capabilities and unit locations determines the movement criteria. For example, in a low air, moderate ground and high counterfire threat situation, a combination of rounds fired and time in position works best.

Whatever the movement criteria, the POC must monitor and plot a howitzer's previous and current locations. This ensures a howitzer doesn't occupy a "new" position that falls in the counterfire footprint of a previously detected howitzer position. It also reduces territorial occupational conflicts with other friendly units in the vicinity.

A Paladin platoon usually operates in a one-by-two-kilometer area, often three to six kilometers back from the front line—the same distance back as other

units, such as logistics sites and maneuver tactical operations centers (TOCs). Because artillery has a firing signature detectable 50 kilometers away, its occupation of a position near another unit can make that unit extremely nervous.

Paladin unit commanders must protect slow-moving or stationary adjacent units from counterfire aimed at a Paladin that's "long gone." Commanders must always coordinate with maneuver to deconflict occupational areas—maneuver *owns* the ground. Also, Paladin platoons must carefully reconnoiter their occupation areas for suitability and to ensure there are no unit "surprises" in the vicinity.

Fuel and Ammo Haul Capability. When employing Paladin tactics, logistics are more challenging, and increased fuel consumption rates are part of that challenge. Because the howitzer idles at 1,200 revolutions per minute during fire missions, runs constantly in preparation for action and moves frequently, fuel resupply is more difficult to plan and execute.

Although the Paladin's base TOE authorizes four heavy-expanded mobility tactical truck (HEMTT) tankers, 2-17 FA's MTOE only authorizes three HEMTT tankers. Given a battle scenario of only moderate intensity, our initial calculations suggest the battalion needs four HEMTT tankers for resupply. Because of training resource constraints, we haven't achieved this moderate intensity tempo yet to confirm fuel expenditures. In addition, there are no fuel consumption rates currently published for the Paladin howitzer.

Ammunition resupply is the other major logistical area that requires detailed forecasting and planning. The current fleet of 27 HEMTT cargo trucks is enough to meet the battalion's needs.

But the number of palletized loading system (PLS) trucks to be fielded in the future leaves some doubt as to whether the battalion will have enough for flexible ammunition resupply. With only 18 PLS trucks, it's doubtful a Paladin battalion will have enough trucks to be at the ammunition transfer point (ATP) up-loading, in the combat or field trains reconfiguring the corps-supplied flat racks of ammo into platoon loads and, simultaneously, at the rearm, refuel, resupply points (R³SPs) resupplying. Corps-supplied flat racks require days of lead time (by which time the battle situation and ammo requirements and mix most likely will have changed) and must be reconfigured for platoon use. The Paladin battalion commander must have

the flexibility to haul the kind and amount of ammo he needs to help affect the battle at critical points and time.

Even though 18 PLS trucks will be able to haul 10 percent more ammunition than the 27 HEMTT cargo trucks can, the fewer number of trucks decreases the Paladin battalion commander's flexibility. This is especially true in terms of his ability to haul special munitions to take advantage of a rapidly changing tactical situation. The increase in haul capacity doesn't offset the decrease in flexibility caused by fewer trucks to use for multiple purposes.

Conclusion. This month, a Paladin battery from 2-17 FA and the battalion's TOC will participate in the 24th Infantry Division's rotation at the National Training Center (NTC) at Fort Irwin, California, a rotation designed to test all the Army's new high-tech equipment; we expect to learn a lot from that rotation. A major milestone for the Paladin will come in July when the entire battalion is scheduled to deploy to the NTC in the direct support role.

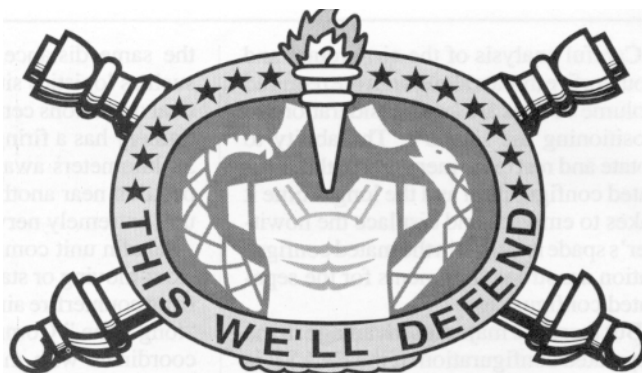
The system already has demonstrated it can perform up to specifications. But fighting and supporting the rapid-fire semiautonomous Paladin requires Field Artillerymen change the way they operate and be flexible in thought. Employing the Paladin is a new way of doing business—the forerunner of things yet to come.



Lieutenant Colonel Sidney E. Riley commands the 2d Battalion, 17th Field Artillery (Paladin), 212th Field Artillery Brigade, Fort Sill, Oklahoma. In his previous assignment in the 5th Infantry Division (Mechanized) Artillery, Fort Polk, Louisiana, he served as S3 of the Division Artillery and Executive Officer of Headquarters Command (Devil Troop Brigade). Other assignments include serving as Brigade Fire Support Officer, Assistant Division Artillery S3 and Battalion S3, all in the 2d Armored Division, Fort Hood, Texas, and as Chief of Supply, Services and Force Modernization, G4, 2d Infantry Division, Korea. Lieutenant Colonel Riley commanded Headquarters and Headquarters Battery, 2d Battalion, 20th Field Artillery, 4th Infantry Division (Mechanized), while deployed to Germany during Brigade '76. He holds a Master of Science in Logistics Management from the Florida Institute of Technology.

FATC Update: Training the Army's New Redlegs

by Colonel Thomas L. Brown



The Field Artillery Training Center (FATC) in the Training Command at Fort Sill, Oklahoma, has three initiatives ongoing to enhance the quality of Redlegs entering America's Army. First, we've revised Military Occupational Specialty (MOS) 13B Cannon Crew Member One-Station Unit Training (OSUT), and second, we're continuing to improve the Fast Track program for MOS 13B and 13P Multiple-Launch Rocket System (MLRS) Fire Direction Specialist. Third, we're implementing a program to better prepare our Army Reserve counterparts to conduct entry-level training for new cannoneers.

13B OSUT. To provide America's Army the finest skill level one cannoneers possible, we restructured the program of instruction (POI) for OSUT batteries. The change, prompted by the increasing "technicalization" of cannoneer training, became effective last August and is a substantial leap forward.

OSUT programs are for soldiers in high-density combat arms MOS who receive training in both basic combat and MOS-related skills in the same unit. In the FA, we have OSUT for 13Bs.

Previously, FA OSUT was little more than eight weeks of basic combat training (BCT) and six weeks of advanced individual training (AIT) taught back-to-back in one training battery. The revised OSUT is now 15 weeks long and integrates cannoneer training throughout the cycle. Early and continuous immersion in FA subjects is producing better trained and significantly more motivated 13Bs.

A pilot program was launched in the 1st Battalion, 19th Field Artillery and 1st Battalion, 31st Field Artillery to determine which tasks could be incorporated most effectively into the first eight weeks of the training cycle. After extensive study, five FA subjects—nine hours of instruction (plus many hours of reinforcement training)—were identified.

The five are Introduction to FA Systems, Introduction to FA Ammunition, Preparation of FA Ammunition, Advance Party Procedures and Emplacement of Aiming Posts and Collimator.

From the first day of training, each private is exposed to an M102 or M119 howitzer secured in his battery area as a training resource and constant reminder of the cannoneer's duty to serve faithfully his piece. Additionally, OSUT trainees are broken down into sections rather than platoons, and each soldier is identified as a numbered howitzer crew member. The soldier performs in a crew member position for a week and then changes to another position.



A 13B receives reinforcement training on attaching a fuze to a shell during OSUT.

Integrating FA subjects throughout OSUT has enhanced the quality of cannoneer FATC graduates. They more strongly identify with FA and are better trained in skill level one tasks. In fact, their gunnery knowledge is considerably expanded due to their increased exposure to "things FA."

EAIT. The enhanced AIT (EAIT) program (also known as Fast Track) provides selected initial entry training (IET) soldiers increased technical knowledge and proficiency. Though EAIT has been in operation for several years, too many units are not taking advantage of their highly trained 13B and 13P Fast Trackers. Units have the misconception that EAIT graduates are simply AIT honor graduates. Not so; they are carefully selected soldiers who demonstrate an ability to perform above the standards for their level of experience. EAIT soldiers receive training not only in skill level one tasks, but also in selected skill level two tasks.

Standards for admission into EAIT are stringent. To qualify for consideration, a trainee must be ranked in the top 33 percent of his AIT (13P) or OSUT (13B) battery; however, the battery commander can recommend no more than 20 percent of his battery for enrollment in EAIT. These soldiers are evaluated on their performance, physical fitness, motivation and leadership potential using a 100-point scale. The EAIT trainee is then held to high standards of performance and conduct. He can be dismissed from the program for a number of reasons, to include misconduct, lack of motivation or poor attitude, failure to achieve 90 percent on all written examinations or failure to achieve a "Go" on all practical examinations.

In addition to the complete AIT POI of skill level one tasks, participants receive instruction in selected skill level two tasks. For example, the cadre from the 1st Battalion,



13Bs do the "Cannoneer Hop" with the M198 howitzer during the 10th week of OSUT.

78th Field Artillery provides 13B Fast Trackers 20 hours of instruction in skill level two tasks. The 13B learns to lay the howitzer for direction, refer the piece, align the collimator, set/lay the cannon for deflection, align the aiming posts, boresight the panoramic telescope and set/lay the howitzer for quadrant. Though he would require close supervision from his section chief initially, a 13B Fast Tracker could be assigned to an understrength howitzer section and assume the duties of a gunner or assistant gunner.

Under the tutelage of MLRS Branch instructors in the Gunnery Department at the Field Artillery School, Fort Sill, 13P Fast Trackers learn the same skill level one tasks as their peers. In addition, they learn about MLRS hardware, software and the initialization of the Version 9 lightweight computer unit (LCU). Thus, a 13P10 Fast Tracker is prepared to perform many of the duties of the 13P20 assistant fire direction center (FDC) chief.

After graduation, each Fast Tracker receives a certificate signed by his battalion commander, a letter of commendation and a letter of introduction to his gaining commander explaining EAIT. The letter to the commander identifies the Fast Tracker as having both technical skills and leadership potential.

TMAR. Training mission augmentation by Reserve units, or TMAR, is a concept that provides mission-oriented training to US Army Reserve (USAR) 13B OSUT training brigades. The mission of these brigades is to augment or replace Active Component (AC) 13B OSUT units during mobilization or fall in on the FATC to

expand the 13B training base. TMAR increases the opportunity for training excellence by allowing Reserve units to train habitually with AC units, thus reducing the learning curve related to training, logistics and safety. It also focuses the Reserve soldiers' peacetime training on their wartime mission.

TMAR has a three-year implementation cycle where the USAR training battalions are always in one of three phases. The first year, a battalion

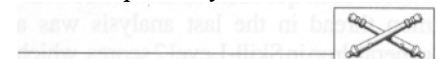


A BCT trainee is evaluated on zeroing an M16A2 rifle during end-of-course testing.

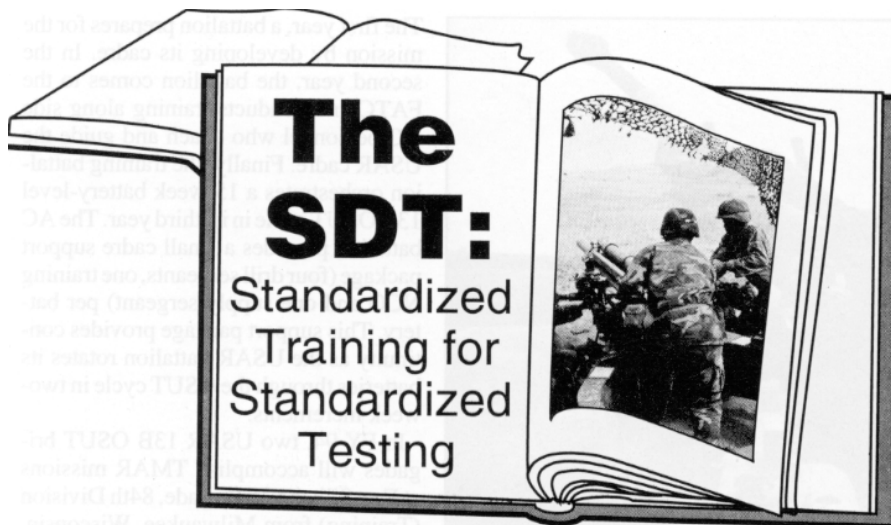
prepares for the mission by developing its cadre. In the second year, the battalion comes to the FATC and conducts training along side AC personnel who coach and guide the USAR cadre. Finally, the training battalion orchestrates a 15-week battery-level 13B OSUT cycle in its third year. The AC battalion provides a small cadre support package (four drill sergeants, one training NCO and one supply sergeant) per battery. This support package provides continuity as the USAR battalion rotates its batteries through the OSUT cycle in two-week increments.

In FY 94, two USAR 13B OSUT brigades will accomplish TMAR missions at Fort Sill: the 3d Brigade, 84th Division (Training) from Milwaukee, Wisconsin, and the 402d Brigade, 95th Division (Training) from Lawton, Oklahoma. Regrettably, the 84th Division is programmed to lose its 13B OSUT brigade in FY 95, thus leaving the 95th Division with the only FA OSUT brigade in the USAR. The 95th Division will continue to execute the TMAR cycle in the future and likely will expand its training base with Fort Sill by executing a portion of the FATC basic training mission as well.

TMAR, FA OSUT revisions and EAIT are all designed to give the best possible training to FA trainees. The results—FA units gain highly motivated, well-trained and physically fit Redlegs. *Mission First—People Always!*



Colonel Thomas L. Brown has commanded the Field Artillery Training Center (FATC), Training Command, Fort Sill, Oklahoma, since June 1992. During his 25 years of service, he has served in a variety of Field Artillery and Foreign Area Officer assignments in the continental US, Korea, Vietnam and Germany. He commanded a firing battery in the 1st Armored Division, Germany, and a battalion in the XVIII Airborne Corps Artillery, Fort Bragg, North Carolina. Colonel Brown also served as Director of the Fire Support and Combined Arms Operations Department at the Field Artillery School, Fort Sill. He's a graduate of the Army War College, Carlisle Barracks, Pennsylvania, and the Fellowship Program at the Hoover Institution, Stanford University, and holds a master's degree in Asian Studies from San Diego State University. The author wants to thank Captain Howard Theiss and Captain John J. Kaiser, both FATC Administrative Officers, for their contributions to this article.



by Command Sergeant Major James C. McKinney and
Sergeants First Class Robert L. Cox and Dennis R. Green

The results of the FY 93 Self-Development Tests (SDTs) for Career Management Field (CMF) 13 revealed that while the CMF is validating proficiency as a whole, there's definitely room for improvement.

An analysis of the test answers indicate one significant problem: a lack of standardized training in units. SDT item analysis reports give detailed information on how soldiers answered each question on the test. A common thread in the last analysis was a general drop in Skill-Level 2 scores, which are the tasks trained by units. The finding was further validated by SDT field inquiries received at the Field Artillery School at Fort Sill, Oklahoma. At least one-third of the SDT inquiries complained that some procedures cited in the SDT don't reflect how their units perform a particular task or address tasks they never perform in their units.

Standardized versus Shortcut Training. All too often, soldiers receive initial training on "shortcut" procedures—those that aren't accepted as standard. Most shortcuts sacrifice functionality or are only applicable to particular circumstances. Whenever a shortcut has universal application, it's incorporated into standard instruction and manuals written at the Field Artillery School. The school trains soldiers on standardized procedures to ensure they recognize the consequences—the tradeoffs—involved in using shortcuts. The decision to use a shortcut as part of a standing operating procedure (SOP) is a unit-level choice, based on the tactical situation.

The Field Artillery School recognizes that the unit SOP is key in unit training. Every unit develops procedures to match its unique tactical situation. At the same time, programs, such as the SDT, can't test soldiers Army-wide on individual unit shortcuts—that would require a different SDT exam for each unit. Obviously, that's impossible. Therefore, the SDT tests standardized procedures, which requires all units conduct standardized training to support that testing. Testing and the training that supports it demand standardization to be fair to the tested population.

Making the Most of Manuals. The unit NCOs' keys to developing standardized training are the soldier's manual and trainer's guide for each military occupational specialty (MOS). While the soldier's manual is widely recognized as the individual soldier's study guide used to prepare for the SDT, it's much more. It's the tool NCOs use to develop standardized unit training, and it also serves as a commander's training evaluation tool.

Used in conjunction with the SDT notice that identifies the tasks to be tested, soldier's manual-based training better prepares soldiers for their SDTs and enhances overall unit proficiency. When the unit's mission-essential task list (METL) is used to develop training with the soldier's manuals and trainer's guides,

the training prepares units for their wartime missions and improves individual proficiency.

While training for the SDT is the individual soldier's responsibility, that training isn't mutually exclusive of his unit's collective training. When properly managed, individual and collective training reinforce each other.

Chapters 1 and 2 of each soldier's manual tells NCOs how to develop and evaluate unit-level training for that MOS. Leaders are encouraged to review these chapters. In addition, first-line leaders need to develop an in-depth understanding of the battle-focused training concept as laid out in *FM 25-101 Training the Force: Battle-Focused Training*. The concept helps NCOs assess training needs and develop an effective training strategy.

A great deal of effort went into the 1993 and later editions of the soldier's manuals and trainer's guides. These editions incorporate detailed task summaries that, for the most part, serve as a one-stop reference for each task. Unfortunately, not all tasks lend themselves to one-stop summaries—for example, tactical automation software-related tasks.

Also included as part of the task summary is the training information outline that highlights key points the trainer needs to communicate in teaching the task. There's enough information in the task summaries for trainers to develop lesson plans that meet "schoolhouse" standards. In addition, commander's and staff officers can use the task performance measures in the summaries to evaluate the unit's individual training and evaluation plan (ITEP)—the foundation of a successful mission training plan (MTP).

The Field Artillery School acknowledges that the unit-level training burden has increased during the last five years as a result of major cuts in Training and Doctrine Command (TRADOC) resources. When institutional training course lengths are cut, more tasks have to be exported to the unit training task list.

Field Feedback and More. The Field Artillery School solicits input on what tasks need to be added to or eliminated from the MOS task lists and how the school can better support unit-level training. The school is continually trying to improve CMF 13 SDTs.

The transition from SQT to SDT caused the school to "misstep" in several ways.

One major lesson learned was the need to manage the impact of force modernization on SDTs. New hardware- and software-based questions were introduced into some SDTs when these systems were only fielded to a small portion of the force.

To better manage the test design process, the Command Sergeant Major of the Field Artillery appointed each academic department sergeant major as the SDT manager for his proponent MOSs. All test design issues for each MOS, such as force modernization, must pass the department sergeant major's "commonsense test." Each proponent sergeant major is reviewing all SDT field inquiries and their responses to capture the field's concerns and ensure the responses are fair to soldiers. The results of SDT validation testing also pass through the department sergeant major to ensure the testing was conducted properly and comments from the validation population are fully considered and implemented, where appropriate.

Command sergeants major Army-wide

are invited to provide the Command Sergeant Major of the Field Artillery thoughts on and suggestions for improving the CMF 13 SDTs. CSMs can send comments to CSM McKinney's E-mail address: MCKINNEJ@SILL-EMH.ARM.Y.MIL

The challenge of training our soldiers to standard in this resource-constrained era is a burden that must be borne equally by the schoolhouse and field. The Field Artillery School remains committed to providing the finest training possible for US Redlegs, who are the finest fire supporters in the world. With help from the field and a renewed commitment to standardized training, the Redleg community can continue to achieve the standard of excellence for which the Field Artillery is known. Drawing down forces does not mean drawing down the quality of training.



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Sergeant First Class Dennis R. Green is the Senior Instructor/Writer for MOS 13F Fire Support Specialist SDT in the Fire Support and Combined Arms Operations Department in the Field Artillery School. Prior to this assignment, Sergeant First Class Green was the 1st Brigade Fire Support Sergeant in the 2d Infantry Division.

Commander's Risk Management Assessment

If you answer "No" to any of the following questions, your risk management assessment process is inadequate.



After the Mission

8. Was the risk management process effective in identifying and controlling hazards experienced during the mission?

This risk management assessment checklist was taken from Appendix L of the "Center for Army Lessons Learned (CALL) Newsletter 93-9 Force Protection (Safety)," which was printed in December 1993. CALL Newsletter 93-3 was designed to provide tactical-level commanders risk management tools to enhance force protection (safety) in both military decision making and training management. The risk management assessment tool featured here is only one of several tools in the newsletter.

CALL publications are distributed to Field Artillery units in the following ways. In the active Army, the command sergeant major (CSM) of each Field Artillery brigade and division artillery receives 50 copies; the CSM of each corps artillery receives 25 copies. In the Army National Guard, each State Adjutant General's Office receives from 50 to 250 copies. In the US Army Reserve, the CSM of each Field Artillery Brigade receives 50 copies.

If your CSM or State Adjutant General's Office is not receiving copies of CALL newsletters or you want to order a back issue of a newsletter, you can contact the CALL Distribution Manager Sergeant First Class Terrance L. Durben by writing Commander, US Army Combined Arms Command, ATTN: ATZL-CTL (SFC Durben), Building 325, Fort Leavenworth, Kansas 66027-7000. You also may call him at DSN 552-2255 or commercial (913) 684-2255 or telefax a request to commercial (913) 684-3959. The back of each newsletter lists all the newsletters printed by CALL.

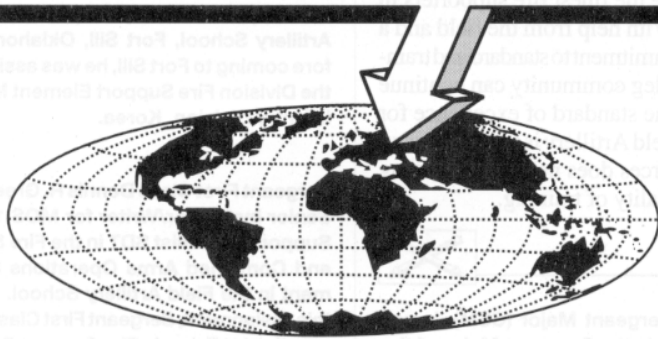
Before the Mission

1. Was a safety risk assessment accomplished at the battalion/task force level?
2. Were the most probable hazards identified for each type of operation (e.g., tracked vehicle, wheeled vehicle, etc.)?
3. Was the probability of each hazard's occurrence/severity assessed?
4. Were control options identified to eliminate or reduce each hazard?
5. Was the decision to accept mission risk made at the appropriate command level?
6. Were the hazards and controls clearly communicated to personnel responsible for implementing controls (e.g., company and platoon leaders)?

During the Mission

7. Were the controls implemented and enforced at the company (or platoon) level?

Honing the Edge: Artillery Training in Europe



by Colonel Christopher C. Shoemaker and
Lieutenant Colonel Mark A. Graham

**“The reports
of my death are
greatly
exaggerated.”**

Mark Twain

In the euphoria of the collapse of the Soviet empire, it has become common practice to look upon the US Army Europe (USAREUR) as an anachronism—a once powerful force whose fangs have been withdrawn in a succession of force reductions and whose chief mission is to bear witness to dwindling American influence on the continent. And, as a corollary, the Field Artillery in Europe, now stripped of its nuclear and chemical might, is sometimes seen as a holding detachment for 13Bs mired in the mud of Grafenwoehr and chained to rusting motor pools in deteriorating caserns throughout Germany.

Both of these bleak perceptions are far from reality; neither reflects the dynamism and purpose that mark USAREUR today. While it is beyond the scope of this article to comment at length about the emerging role of USAREUR as America's forward-deployed contingency force, the two divisions that constitute V Corps are both trained and ready to project

power into any theater in the world and fight and win the wars of our nation.

The purpose of this article is to address the second perception and, in that context, to outline artillery training opportunities in Europe as a conceptual catalog that may have value Army-wide. For, indeed, the Field Artillery in Europe is on the move with a philosophy rooted in the new *FM 100-5 Operations'* approach to war-fighting that is setting the stage for the Army of the third millennium.

The Training Triad

The fundamental tenet upon which the structure of Field Artillery training rests is that every combat commander is first responsible for the maneuver, application and synchronization of fires the length and breadth of the battlefield. Commanders at all levels must have the capacity to bring their combat power to bear at exactly the right place at precisely the right time—a feat that calls for leaders of unique ability and units prepared to march to the sound of the guns.

For the Field Artillery, the realities of 21st century combat present significant training

and tactical challenges and require we move far beyond our time-honored, but sometimes rigid, approaches to training into a new era of imagination and initiative. The simultaneous pressures of a collapsing budget, a reduced force structure and an expanding array of national commitments require each of us to search for more effective ways to train. Moreover, we can ill afford "shotgun training," an approach in which the various elements of training are not mutually supportive.

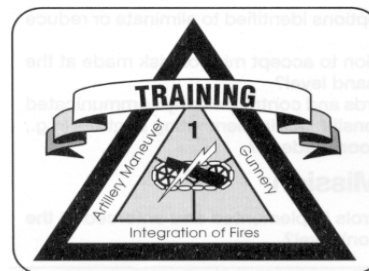
At the foundation, we believe the demands of warfare in the next century require a training program rooted in three basic components: gunnery, artillery maneuver and integrated fires. Each of these elements—the training triad—must receive the focused attention of artillery leaders at all levels. This triad is an important approach for successfully preparing Field Artillery units for challenges across the operational continuum, including the expanding requirements for operations other than war (OOTW).

In a perfect world, we would train all three components at the same time. Unfortunately, the realities of our training environment dictate we most often undertake these components one at a time. In a similar vein, we discuss in this article the implications of the triad, using illustrations from the FY 93 training program of the 1st Armored Division Artillery (Div Arty) based in Baumholder, Germany.

Gunnery. As the traditional bastion of the Field Artillery, our gunnery skills have never been as polished as they are today. In each of the five elements of accurate, predicted fire—target location and size, firing unit location, weapon and ammunition information, meteorological (Met) information and computational procedures—we have achieved unprecedented accuracy and timeliness. In the Field Artillery community, we hone our gunnery skills the old fashioned way, in the position areas (PAs) and

impact areas of the Army's major training areas of Europe and around the world.

We build gunnery skills from the ground up, beginning with individual and section



skills achieved through the Sergeant's Time training program and assessed in cannon section evaluations. Upon this solid foundation, we build collective gunnery skills with platoon and battery cannon tables, both dry and live fire. We then develop and enhance our ability to mass fires at the battalion and higher levels during major training densities and live-fire exercises.

In the gunnery component of our training program, we use devices and simulations extensively, for example the tried-and-true training set, fire observation (TSFO). In addition, the fielding of a new generation of computers, such as the initial fire support automated system (IFSAS) and the advanced Field Artillery tactical data system (AFATDS), will provide expanded opportunities for simulations in training fire direction and operations personnel. But there is not now, nor will there ever be, an all-embracing substitute for live fire—the final test of gunnery skills.

This conceptual and practical approach to the gunnery component has produced cannon and rocket accuracy and timeliness that are simply the best in the world.

Artillery Maneuver. Gunnery, by itself, is not enough. We also must be able to maneuver and mass indirect fires across the battlefield and in depth. We can achieve some of this maneuver through our relatively extended range. But much of it must be accomplished by physically moving our weapons. This is a skill of profound importance.

As we discussed earlier, the commander's principal task in battle is the maneuver, application and synchronization of combat power wherever and whenever required by the vagaries of combat. As we develop our ability to fight on the nonlinear, chaotic battlefields of the future, the importance of artillery maneuver cannot be overstated. This, in turn, demands the Field Artillery be as capable of maneuver in combat as we are in gunnery; battalions, batteries and platoons must be expert in moving across great distances under arduous conditions to bring fires to bear at the critical point in battle.

We are not training now, nor have we ever trained, artillery maneuver at Grafenwoehr or any of our traditional artillery training areas. The process of moving a battery from PA 152 to PA 274 is not maneuvering fires; it also does not train battery and battalion leaders to reconnoiter, select or occupy positions (RSOP). We delude ourselves if we



Gunnery, artillery maneuver and integrated fires must receive the focused attention of artillery leaders at all levels.

imagine that current training in a major training area (MTA), whether at Grafenwoehr or any post in the United States, accomplishes anything except enhancing our gunnery skills.

Even at the CTCs, our ability to maneuver fires is limited; there are few chances to maneuver artillery across scores of kilometers, the distances required on the battlefields—or in the OOTW—of tomorrow. Yet, even in these constrained environments, the maneuver of fires at the CTCs is routinely one of the artillery's most noted weaknesses.

If we are to train to maneuver, then we must maneuver. But translating this rather straightforward axiom into a training program can be challenging. Again, in the 1st Armored Div Arty, we were uniquely positioned to train and train hard in this critical skill. For, contrary to popular belief, maneuver rights areas (MRAs) are alive and well within the Rheinland-Pfalz and Saarland states of Germany, the regions immediately adjacent to Baumholder. During FY 93, the Div Arty's cannon and multiple-launch rocket system (MLRS) battalions conducted many exercises in MRAs—enormous sections of the German countryside that embrace some of the most challenging terrain any artillery leader could encounter.

Routinely, an MRA will include 600 square kilometers, an area large enough to replicate a brigade sector. The larger MRAs, such as those used by the Div Arty's MLRS battalion, can encompass thousands of square kilometers, certainly as large as a division sector. Use of the MRAs gives commanders and leaders from the cannon section and MLRS

self-propelled launcher-loader (SPLL) through the Div Arty the opportunity to maneuver in real-world terrain with all the concomitant challenges inherent in the movement and RSOP process.

Moreover, MRAs expose battalion and Div Arty staffs to the complexities of executing operations when confronted with real-world obstacles, such as steep grades, swollen rivers and congested highways. Staff planners routinely find that executing a plan on the ground is far more difficult than imagined. As a result, they learn to plan realistically and anticipate the unexpected.

We found the learning curve in artillery maneuver is quite steep; skill levels begin abysmally low, particularly among those leaders who have not experienced MRAs before, but improve dramatically in a week-long exercise. At first, road march intervals are uneven; land navigation skills are rusty; leaders do not anticipate small but critical details, such as bridge classifications; and officers and sergeants do not display a keen sense of tactical confidence in selecting positions. But these skills improve with exposure to the rigors of the MRA, and all leaders learn to maneuver with great agility.

Of equal importance, they almost invariably develop a keen sense of imagination. They learn to respond to unforeseen challenges with the purpose and confidence that lead to victory in the crucible of combat. Finally, the soldiers themselves enjoy exercises in the countryside and become personal ambassadors of good will with the German people.

After having made a strong argument for the efficacy of MRAs, we recognize

that few artillery units have unrestricted access to vast expanses of countryside. Nonetheless, artillery maneuver is a tactical skill of such central importance that it must not be overlooked. Accordingly, we suggest several principles to enhance training leaders at all levels to maneuver artillery.

- Play the hand you are dealt with imagination and daring. Take a hard look at the training areas available and optimize their use for artillery maneuver.

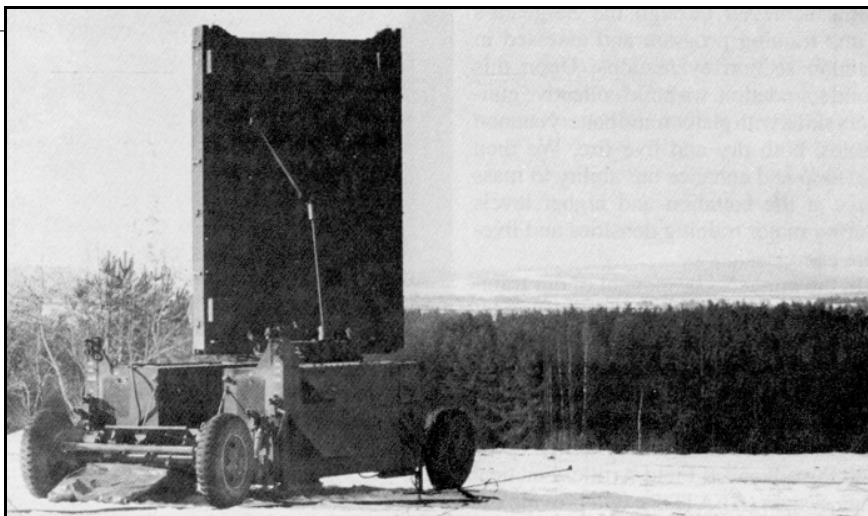
- Separate artillery maneuver training from gunnery; do not require units to fire from the positions they occupy. Continental United States (CONUS) installations often possess vast tracts of maneuver space from which impact areas cannot be ranged but are ideal for artillery maneuver. Maneuvering in such areas will dramatically increase the utility of CONUS military reservations and allow for a much more imaginative approach to the occupation of positions.

- Whether in Europe or elsewhere, get off the reservation and make maximum use of battle exercises without troops (BEWTs) to hone leadership skills in the reconnaissance and selection elements of the RSOP equation. If the sensitivities of the civilian population are particularly acute, leaders can use privately owned vehicles and dress in civilian clothes to use the countryside without raising local opposition.

- Use simulations at all echelons. Indeed, at higher levels, training to maneuver fires is best accomplished using the increasingly sophisticated array of computer-driven simulations the Army is fielding. While adjusting icons on a computer screen is no substitute for moving howitzers and SPLs on the ground, computer training is an invaluable adjunct to training battalion, brigade and division commanders on the complex requirements of maneuvering artillery in battle.

- Do not forget to maneuver radars and Met. Too often, we ignore the very real challenges that our target acquisition batteries (TABs) and Met sections face in maneuvering their assets on the battlefield. While artillery staffs may do well in planning to employ these assets, there is often a tremendous gap between what appears on a map and what exists on the ground.

Integration of Fires. Even as we polish our gunnery skills and develop new levels of competence in artillery maneuver, we must retain our focus on



Leaders need to maneuver their radar and Met assets during training.

integrating fires with the combat power of infantry, armor and aviation. This integration must be accomplished from company and task force levels through the corps level.

There is a variety of mechanisms for improving our ability to integrate and synchronize the commander's fires on the battlefield. Command post exercise (CPX) simulations, such as Janus, battalion-brigade battle simulation (BBS), corps battle simulation (CBS) and the like, provide invaluable training in the principles—and payoff—of synchronization. Artillery exercises, such as tactical fire direction system (TACFIRE) CPXs, allow artillery and maneuver leaders to hone their skills in the technical and tactical application of indirect fires. And, at the pinnacle of our training hierarchy, the Army's Battle Command Training Program (BCTP) and our Combat Training Centers (CTCs) give commanders training of inestimable value in integrating combat power in a realistic tactical environment.

Taken together, these tools provide us a robust array of training opportunities to synchronize combat power that is a *sine qua non* for victory in battle. But, as powerful as they are, they are only as good as the attitudes of tactical leaders allow them to be. The following are some suggestions to consider in focusing the mindset of Army leaders at all levels.

- Be aggressive and unrelenting in your efforts to push your way into the inner circles of the maneuver commander as he develops and implements his training strategy. As artillerymen, we must never become party to stove-pipe training.

- Take every opportunity to draw maneuver—sometimes kicking and

screaming—into artillery training. TACFIRE training, in particular, provides a wealth of opportunities for such training, if properly packaged and presented to maneuver commanders. Regardless of the format, *all* artillery command and control exercises should use a maneuver-based scenario and involve as many maneuver leaders as possible.

- Use a "Christmas Tree" approach to training. Once the basic framework of an exercise is developed, hang as many maneuver ornaments on it as possible. This helps ensure we maximize the return on the exercise's sunk costs.

- Become expert in maneuver doctrine. Officer professional development (OPD) and noncommissioned OPD sessions should focus on maneuver tactics. At the same time, artillery leaders should seek every opportunity to teach maneuver commanders the intricacies of planning and executing indirect fires.

The Triad Applied: Rolling Steel 93

As daunting as conditions are, it is both possible and essential that we move forward with an aggressive training plan to prepare our soldiers, units and leaders for the challenges of the 1990s. In Europe, the Field Artillery community continues to push the envelope of training to realize the full potential the European environment offers.

Illustrative of the dynamics of artillery training in Europe and the practical application of the training triad is Exercise Rolling Steel 93. The exercise was a computer-driven, maneuver-based combined field exercise (CFX) conducted in the heart of Germany's Rheinland Pfalz. The 1st Armored Division Artillery planned,



A HEMTT with HEMAT (heavy expanded-mobility ammunition trailer) maneuvers across the German countryside during the 1st Armored Division's Rolling Steel 93.

developed and executed Rolling Steel, using the division's CBS as its centerpiece. The computer simulation was established in a temporary site at an abandoned Hawk missile installation 20 kilometers west of the Mosel River.

Using a tactical scenario and a Third World enemy developed by the Div Arty, the division's tactical command post (TAC) provided tactical command and control, while the maneuver brigades fought the week-long battle from their cells in the simulation center. The Div Arty's entire command and control structure—to include the main and assault command posts (CPs), the battalion tactical operations centers (TOCs) and the battery and platoon fire direction centers (FDCs)—deployed to the MRA and maneuvered enormous distances over torturous terrain in response to the movement of icons in CBS. Fire missions and tactical movements were orchestrated by the CPs on the ground as battles and engagements were fought in the computer.

The division's attack helicopter battalions staged in an abandoned Luftwaffe base and flew missions, both in the computer and in the air, against targets along the Luxembourg border. As a side note, we found that helicopter missions flown simultaneously in the computer and in the real world arrived over their target areas within seconds of each other.

Heavy expanded-mobility tactical truck (HEMTT) tankers and cargo vehicles maneuvered throughout the area,

providing real-time logistical support. Corps engineers threw bridges across the Mosel River, allowing Div Arty, battalion and battery CPs to cross in response to developments in the simulation. For a week, the western counties of the Rheinland Pfalz were alive with American forces conducting a demanding, high-stress exercise that exploited the full potential of automation and the MRA.

Through the melding of a computer exercise with maneuver on the ground, Rolling Steel achieved a level of training that was unprecedented in the Div Arty. It was particularly valuable in training the triad components of artillery maneuver and integration of fires. Gunnery live-fire exercises conducted at the Baumholder Training Area before and after Rolling Steel rounded out the third element of the triad.

To be sure, Rolling Steel demanded extensive preparations and methodical execution. Yet, we established achievable standards and met all our objectives within the resources of the Div Arty. And the returns on our investment in time and energy were incalculable. While the specific design of this exercise was unique to the 1st Armored Div Arty, the general approach is valuable Army-wide.

Conclusion

Training Field Artillery soldiers, units and leaders in Europe of 1993 reflected the potential that our technology and imagination offer. In an era of

increasingly constrained resources, we must approach the task of training with innovation and daring, making the best of what we have within the principles of an achievable, integrated training strategy. The Field Artillery, at the very foundation of our national strategy of power projection, must be trained and ready to deploy, fight and win across the entire spectrum of international challenges. It is our charter to take what we are given and return to the American people a fighting artillery that is up to the challenges of a new world.



Colonel (P) Christopher C. Shoemaker commanded the 1st Armored Division Artillery in Baumholder, Germany, from July 1991 until July 1993, implementing the training triad and conducting Exercise Rolling Steel 93. Currently, he is the Chief of Staff of the Field Artillery Center and Fort Sill, Oklahoma. He also has served as the Special Assistant to the Chief of Staff of the Army and on the staff of the National Security Council of the White House for both the Carter and Reagan administrations. His other commands include the 2d Battalion, 29th Field Artillery, 8th Infantry Division (Mechanized), Germany, and a battery in the 212th Field Artillery Brigade, Fort Sill. He holds a master's degree and PhD from the University of Florida. Among his many articles and several books are two other training articles published in *Field Artillery*.

Lieutenant Colonel Mark A. Graham was the S3 of the 1st Armored Division Artillery from April 1992 to June 1993 and helped design and conduct triad training and Rolling Steel 93. Currently, he is the Chief of the Field Artillery Proponency Office at the Field Artillery School, Fort Sill. In other assignments, he served as the S3 of the 2d Battalion, 18th Field Artillery, 212th Field Artillery Brigade, Fort Sill; S3 of the 2d Battalion, 29th Field Artillery, also in the 1st Armored Division; and G1 of VII Corps Artillery during Operations Desert Shield and Storm. Lieutenant Colonel Graham has commanded two batteries and will take command of the 1st Battalion, 17th Field Artillery, 75th Field Artillery Brigade, III Corps Artillery at Fort Sill in July. He holds a Master of Business Administration from Oklahoma City University.

Deadly Thunder: 25th Div Arty BCTP Campaign Plan

by Colonel Reginal G. Clemmons



The 25th Infantry Division (Light), Schofield Barracks, Hawaii, executed a Battle Command Training Program (BCTP) Warfighter Exercise from 23 to 27 October 1993. The division artillery (Div Arty)—Tropic Thunder—played a decisive role in the success of the Tropic Lightning Division in this demanding exercise.

This article describes the Div Arty's BCTP campaign plan to prepare for and execute Warfighter and highlights lessons we learned and, in some cases, relearned. The tactics, techniques and procedures (TTP) and train-up campaign we used may prove beneficial to other Field Artillerymen in preparing for their Warfighter Exercises.

To reach the highest possible state of readiness, a Div Arty needs a thorough train-up plan—a campaign plan. The Tropic Thunder campaign plan began a full year before our Warfighter and incorporated the entire fire support system. Key players included the division fire support element (FSE); brigade FSEs, to include a non-divisional heavy brigade from the 1st Infantry Division (Mechanized) out of Fort Riley, Kansas; the Div Arty tactical operations center (TOC); I Corps FSE from Fort Lewis, Washington; an I Corps Artillery reinforcing brigade, the 115th Field Artillery Brigade (115th FA Brigade) of the Wyoming Army National Guard (WYARNG); and elements of the division staff.

The plan incorporated all scheduled exercises and was supplemented by BCTP-specific training, based on carefully structured training objectives. Flexibility and

self-evaluation were critical in developing and executing the campaign.

Preparation

The most important ingredient for success in training or combat is the battle-focused, well-trained quality people we have in our Army today. For the BCTP train-up, a Div Arty must identify its key positions early and fill them with quality personnel. The executive officer (XO), S1, S2, S3, S4, deputy fire support coordinator (DFSCOORD), fire control officer (FCO) and their NCOs-in-charge (NCOICs) must be in their positions long enough to train to standard and know their duties. This also applies to the brigade fire support officers (FSOs), light tactical fire direction system (LTACFIRE) personnel and the Div Arty signal officer.

LNOs. Liaison officers (LNOs) are a requirement not resourced by the Div Arty's modified table of organization and equipment (MTOE); the importance of these positions is frequently underestimated. A division needs LNOs in the corps; adjacent divisions, to include host nation units; and sometimes with sister services. During Warfighter, we needed four LNO teams, to include two field grade officers. An LNO standing operating

procedure (SOP) that clearly articulates duties and responsibilities is a necessity.

SOPs. Good SOPs consistent with those of higher headquarters are the cornerstone to BCTP success. BCTP observer/controllers (O/Cs) will hold division players to those SOPs during Warfighter.

When a division updates its SOPs, it must ensure they remain doctrinally correct. There's much evolving doctrine being published now, and units must know it and base their SOPs on it. We had to incorporate into our SOPs key doctrinal changes found in *FM 71-100-2 Infantry Division Operations Tactics, Techniques and Procedures* and *FM 100-5 Operations*. SOPs should be short and use great ideas from other divisions and checklists, whenever possible.

Our initial focus was on training the Div Arty staff in the estimate and orders development process. We quickly realized our tactical SOP (TACSOP) didn't include any detailed discussion of how to develop an FA support plan (FASP) or the information required to develop it. So we wrote a TOC SOP annex to the Div Arty TACSOP that standardized and formalized these procedures and filled the critical gap between doctrinal manuals and unit-specific procedures.

We modified the common orders process found in *FM 101-5 Staff Organization and Operations* (Draft) and *Command and General Staff College (CGSC) Student Text 100-9 The Tactical Decision Making Process* to fit our mission and needs. (See Figure 1 for the eight steps in our orders process.) The product of this process was a FASP, developed by and coordinated across the staff, that included a synchronization matrix with timed phases of execution. The matrix incorporated maneuver operations down to the brigade/separate battalion level and actions by Div Arty assets.

We developed this orders process and associated checklists over a period of several months and routinely trained using them during monthly Div Arty staff exercises. Detailed checklists and formats for each step of this process were the standard.

We wrote staff battle drills for tasks, such as movement planning, fragmentary order (FRAGO) development, fire planning, reactive counterfire and Q37 Fire-finder radar linkage with attack helicopters for deep attack missions. Based on doctrinal principles, these battle drills identify, sequence and synchronize actions that must occur to accomplish basic tasks.

Training made the drills second nature for the battle staff.

Our revised TOC SOP also includes the standard physical layout of the Div Arty command post (CP), which combines both the TOC and the administration and logistics center (ALOC) inside the wire. The TOC SOP has the visual display and chart requirements for each staff section, designation of shift duty positions, duty descriptions for each position, information requirements for the commander and his staff sections, information flow procedures within the TOC-ALOC and staff briefing requirements and formats.

We exercised the SOP over a period of months under varied and extreme weather conditions, always in a tactical setting and using internal staff exercises and CP exercises (CPXs). The result was, that when we began the division-level training for BCTP, the Div Arty had a valid, working SOP, complete with an orders development process. The commander and staff officers and NCOs knew the TOC SOP, were comfortable with it and could routinely follow it under extreme weather conditions.

Fire Support Automation. Fire support success depends heavily on using automation properly—for example, the division LTACFIRE. Whereas our individuals and sections were well-trained, integrating the entire fire support LTACFIRE system was an identified weakness. The division operations tempo (OPTEMPO) for FY 93 throughout the Pacific Rim precluded a robust LTACFIRE sustainment program involving all nodes.

In June 1993, the Div Arty S3 instituted a compressed LTACFIRE training program that included the division fire support system in garrison and the field. During this intense training, the LTACFIRE SOP was modified to reflect lessons learned.

Additionally, the division received a heavy brigade with its direct support (DS) artillery battalion from the 1st Infantry Division for Warfighter, and we had to tie that battalion into our LTACFIRE architecture and training plans. Our SOP already addressed the heavy/light task organization, which made this process a lot easier. Such a complete SOP is particularly critical in order to work through the differences between TACFIRE and LTACFIRE and for tactical communications in general.

Early identification of and training with the Div Arty's reinforcing FA brigade is absolutely critical as it

The Div Arty Staff Planning Process

- (1) Receive the mission.
- (2) Develop commander's/staff estimates.
- (3) Brief the estimate to the commander.
- (4) Receive the commander's guidance.
- (5) Develop courses of action (COAs), compare them and recommend one.
- (6) Conduct war game/synchronization drill.
- (7) Brief war game and synchronization results to the commander.
- (8) Receive additional commander's guidance.

In BCTP, we rarely used this step because we were developing a plan to support a previously selected division COA.

Figure 1: The 25th Div Arty Staff's Orders Process. The Div Arty developed this eight-step process and detailed checklists and formats associated with each step. The resulting product is a FASP that's developed by and coordinated across the staff and that includes a synchronization matrix with timed phases of execution. The FASP incorporates maneuver operations down to the brigade/separate battalion level and actions by Div Arty assets.

facilitates planning for personnel and equipment and identifies funding issues associated with the train-up and execution. While the 115th FA Brigade was not designated as our reinforcing brigade until three months before Warfighter, we were fortunate that the 25th Div Arty had had a very successful training relationship with the 115th FA Bde for many years. This close relationship and the brigade's familiarity with division and Div Arty SOPs paid off in spades. We benefitted greatly from the 115th FA Brigade's participation in two division CPXs before Warfighter. These CPXs increased their understanding of the division and Div Arty's planning and execution processes and built confidence and teamwork between the Div Arty and brigade staffs.

Training Plan. When developing a BCTP training plan, it's imperative that no training opportunities be lost. The division was able to integrate BCTP-specific training (without LTACFIRE) into exercises to be conducted long before the usual Warfighter train-up period. The division worked with I Corps during overseas deployment exercises, such as Yama Sakura (Japan), Cobra Gold (Thailand) and Ulchi Focus Lens (Korea). The division staff worked together at Team Spirit (Korea), Tropic Prelude (Australia) and several Lightning Thrust (brigade external evaluations) and Tropic Lightning field training exercises (FTXs) on Oahu. We integrated these exercises into the campaign plan because our leadership recognized a year out that Warfighter was the division's premier training event.

This focus gave the division a great head start, but we recognized that these exercises wouldn't fully replicate BCTP conditions. Therefore, we concentrated on those BCTP training objectives that train-up exercises could duplicate. More

importantly, we continued to refine our TTPs and update our SOPs after every exercise.

One of the key training objectives of any exercise is the staff analysis and orders writing process, which doesn't differ significantly from the process used for a BCTP. From initial mission analysis to publication of the order, units can conduct realistic training. The training also can allow a Div Arty to refine the products of the orders processes going on at the division headquarters and those of its major subordinate commands (MSC) and separate battalions. Only a clear vision of the mission and a microscopic focus by the division and MSC commanders will ensure they thoroughly analyze the mission requirements and prepare clear, effective orders.

Targeting. The targeting process is one of the most critical areas to ensure success in Warfighter. Targeting requires the coordinated effort of the entire staff to be effective and involves input from commanders and their staffs at all levels. The division recognized this early and used the Fort Sill targeting mobile training team (MTT) to help.

The MTT taught doctrinal targeting procedures to a large audience at low cost. We used the MTT as a division training event to ensure the widest possible dissemination of information to key division soldiers. We videotaped the classes so newly arriving key personnel also could receive the instruction.

The targeting portion of the division TACSOP is the main document used in the division targeting process. The basis of the SOP is *FM 6-20-10 The Targeting Process*. Although this is an excellent reference, we supplemented it with information

found in more recent doctrinal literature, such as FM 71-100-2, the new FM 100-5 and the draft FM 101-5. Also, we shamelessly borrowed techniques and procedures from other divisions' targeting SOPs, providing a wealth of information on how to implement the doctrine.

BSC Response Cell Structure. We spent considerable time early in BCTP designing Battle Simulation Center (BSC) FA response cells to replicate FA units in the simulation and make that replication transparent to the field TOCs during the exercise. Our response cell design is different than the standard BCTP table of distribution and allowances (TDA), and we believe our concept increases the training value of Warfighter.

The BCTP TDA for a division Warfighter calls for one DS fire support work cell, one reinforcing FA brigade work cell and one radar work cell. The DS cell consists of two 13-man shifts headed by a lieutenant colonel officer-in-charge (OIC) and functions as the role player of all DS FA battalions; traditionally, the OIC of each shift is a DS battalion commander. The FA brigade cell consists of two 10-man shifts headed by an OIC and functions as a role player for all general support (GS) and general support reinforcing (GSR) artillery. The radar cell consists of two four-man shifts under a radar warrant officer and plays the Firefinder radars in the simulation, both Q36 and Q37.

This standard BCTP TDA is inappropriate for several reasons. During the exercise, the maneuver brigade TOCs are in the field as player units and the appropriate place for brigade FSCOORDs is with those brigade TOCs or in the command groups, *not* in the BSC as a cell OIC.

Secondly, one DS work cell has difficulty playing all DS battalions. Each maneuver brigade uses different SOPs, fire planning procedures and orders development processes, requiring one cell to know the SOPs and TTPs of all the brigades.

Finally, one DS cell does not maximize the training benefit of BCTP. The division's OPTEMPO is such that War-fighter is the only time that *all* division elements could participate in an exercise, but with the BSC TDA, only two of our DS battalion commanders and their staffs gained the benefit of working in the simulation center.

Our design for the BSC cells calls for each DS FA battalion to man its own response cell in the BSC. The DS cell consists of two, 10-man shifts, each with

a *major* as the OIC. The cell functions as a role player for its battalion *and* its Q36 radar. The DS battalion commanders—the brigade FSCOORDs—work primarily in the field. The FA brigade cell remains basically unchanged. The radar cell plays only the GS Q37 and, depending on the FA organization for combat, any GS Q36 radars.

We put digital devices in all appropriate BSC cells to replicate doctrinal digital links. Our plan included providing our reinforcing FA brigade a LTACFIRE dual-station CP (DSCP) because the 115th FA Brigade doesn't have TACFIRE. We put one DSCP in the DS cell, with two DS battalions working from each of the terminals, and we positioned a second DSCP for the FA brigade and radar cells to share. The radar cell processes requests for additional fires (FM:RFAs) and target intelligence coordinate reports (ATI:CDRs), based on corps battle simulation (CBS) acquisitions.

Each maneuver brigade cell included one fire support team (FIST) digital message device (DMD) and one forward entry device (FED). The DMD was used for fire planning and execution and the FED to update observer locations (OBCOs) and pass shell reports (SHELLREPs) in TACFIRE. This system worked, but we had to develop a digital communications architecture for the exercise with a subscriber table to support this new organization. Inside the BSC, we hard-wired digital communications wherever possible to reduce reliance on multiple FM radio links going into the same DSCP.

The cost of organizing cells in this manner is additional space in the BSC for the DS cell, additional equipment (radios, remotes, antennas, TOC equipment, etc.) and additional personnel. We feel the training payoff is well worth the cost.

We used the new BSC organization during one of the division's CPXs before BCTP, and it worked well. However, during Warfighter, we were required to use the BCTP TDA. After completing Warfighter, I feel even more strongly that having a separate cell for each DS FA battalion is the better way. The new organization must be coordinated early in the BCTP planning process as it affects BCTP O/C requirements and may affect attached heavy/light brigade personnel requirements.

We developed our own "How To" book for BSC response cells that explained how CBS works and included specific details on how to move (air and ground), shoot, resupply and execute scheduled fires. We pulled appropriate technical



25th Div Arty operations personnel update the plans map during BCTP.

information from the Jet Propulsion Laboratories (JPL) CBS manuals and included it in the How To book. We also added relevant warnings, danger areas and CBS work-arounds.

Developing and practicing the How To was superb preliminary marksmanship training for our response cells. We battlerostered our soldiers and ensured the ones we trained were the ones we used during Warfighter.

Execution

The key to successfully executing the Div Arty's missions in the deep, close and rear battles is early integration into the division's planning process. Because of compressed planning times, parallel planning is the norm. The Div Arty S2 and S3 must be players in the division's course of action (COA) and war-gaming processes. There are critical junctures where the S2 and S3, working in conjunction with the division planners and maneuver brigade S3s, can help identify gaps in the plan and synchronization requirements.

Early involvement in the division planning process also allows the Div Arty staff to begin its estimate process early. Continuous discussions with division planners and brigade S3s is important in developing viable time lines and detailed synchronization matrices. Waiting for a final decision on a COA and formal division documents will put a Div Arty's planning efforts way behind the power curve.

The intensity level during the exercise stressed fire support planning at all levels.

The division's four-phased plan was forced into a branch halfway through Phase II—time lines went out the window. We discovered that with sound parallel planning procedures, the increased tempo doesn't adversely affect fire support operations. It does, however, highlight the need for a fire support plans officer at the division main CP (DMAIN).

The division tactical CP (DTAC) FSE must be manned and equipped to independently control the close fire support battle. We gave the DTAC FSE control of close air support (CAS) missions, making CAS more responsive to the intent of the Assistant Division Commander for Operations. Managing the close battle fire support coordination measures (FSCM), to include LTACFIRE geometry updates and division coordinated fire line (CFL) recommendations, became the responsibility of the DTAC FSE.

Radar and MLRS Security. Important to success in the division's counterfire battle is maintaining operational Firefinder and multiple-launch rocket system (MLRS) assets. Security for these systems is critical, which O/Cs emphasize time and again. Without dedicated security assets, the opposing force (OPFOR) will find and destroy the MLRS launchers and radars.

Our division commander recognized the significance of protecting Firefinder and MLRS and allocated sufficient maneuver forces for this mission. In our Warfighter, we had one infantry platoon security force dedicated to each Q36 or Q37 radar and at least one infantry platoon (preferably mechanized) providing security for each MLRS battery. The security mission requires close coordination between the Div Arty, FA brigade and ground maneuver forces, but it can and does work. The point is, the division commander consistently directed assets be dedicated to protect his force multipliers—a decision he must make for it to be implemented to standard.

Fire Support Coordination. The 25th Division had an excellent opportunity to conduct fire support coordination with I Corps, which was a player with the division in Warfighter—a BCTP first. With a "real" corps playing, the scripted corps portion of Warfighter was eliminated. The result was much closer coordination and integration of corps fire support efforts with our own.

A major part of fire support is delineating corps and division areas of responsibility—which we did using a non-doctrinal deep battle line (DBL). The

DBL is a line I Corps uses to divide the area of focus between the corps and its subordinate divisions and is determined by the ranges and capabilities of division-controlled systems.

Additionally, complementary targeting strategies made attending corps targeting team (CTT) meetings an important part of division fire support planning. A Div Arty representative should attend the CTT meetings, preferably an LNO, but he should *not* be the DFSCORD as in our Warfighter; he doesn't have the time.

Counterfire and Deep Operations. Our major missions in support of division operations were winning the counterfire battle and providing timely, accurate fires for other deep operations. We designated the FA brigade as the headquarters for executing counterbattery fires and schedules of fire and attached the target processing section from the FA detachment to it. The Div Arty planned and coordinated movements, fire plans and orders development.

Success in the artillery portion of the counterfire battle depends on clear priorities for target attack and attack guidance for each target. Recognizing we didn't have enough assets to attack every enemy fire support asset with sufficient volume of fire to be effective, we worked with the division staff to establish counterfire priorities by phase and then focused collection and attack assets on those targets.

Our counterfire attack guidance centered on attacking only confirmed or "A+" templated targets. This guidance was a function of the number of firing units and ammunition available and the ability to attack the counterfire target with enough volume of fire to render it combat ineffective. We specified the volume of fire for each target type (tube artillery, multiple rocket launcher, air defense artillery, dug-in, in the open, etc.), based on a combination of joint munitions effectiveness manuals (JMEMs) and the CBS indirect fire effects program.

Admittedly, there was some gamesmanship involved here. But the point is we established a volume of fire, based on the weapon system and target type, rather than merely specifying suppress, neutralize or destroy attack criteria.

Another technique we used in reactive counterfire was a quick-fire channel between the Q37 radars and the MLRS battalion. This greatly reduced the reaction time between target detection and attack. Establishing appropriate digital links ensured that Q37 detections

were processed in TACFIRE as FM:RFAFs to the MLRS battalion and as ATI:CDRs to the target processing section.

Planning to support aviation brigade deep attacks was a particular challenge because the deep operations planning cell located at the DMAIN planned those operations. The key to successful execution is developing the suppression of enemy air defenses (SEAD) fire plan early enough to disseminate, compute technical solutions, clear targets and rehearse the plan.

While we tried to rehearse each attack, we weren't always able to. When the aviation brigade FSO could rehearse the attack, deep attack operations were more synchronized and generally were more successful.

Targeting. Warfighter challenged our targeting process more than any other training experience. In addition to fighting a digitized "world-class OPFOR," synchronizing intelligence assets available to the division challenged our team's ability to decide, detect and deliver.

Before BCTP, the division added "assess" to this targeting methodology: decide, detect, deliver and assess. We added *assess* for battle damage assessment (BDA) after the *deliver* stage and before we started the cycle again at *decide*. With a limited number of systems and amount of ammunition, we had to make the most of our fires on the highest priority targets.

At the end of Warfighter, we added "track" as well: decide, detect, track, deliver and assess. The greatest targeting challenges we faced during BCTP were detecting and tracking enemy high-payoff targets (HPTs) in the division deep battle. Our procedures were more than adequate to *decide* what HPTs to target. Coordinating systems to *deliver* against targets also worked well. Detecting and tracking those targets were more difficult.

The lead time required to execute deep operations requires constant tracking and updating of a target. In training exercises, these hadn't been a problem. During Warfighter, the OPFOR's expertise required us to analyze more thoroughly where the HPTs were to execute deep attack missions successfully.

The *track* phase facilitated fusing intelligence information for targeting, emphasizing Firefinder radar data provided by the Div Arty S2, signal intelligence from the military intelligence battalion and corps input collected by the G2. The FA

intelligence officer (FAIO) served as the focal point for identifying and tracking targets.

The Div Arty targeting cell conducted devastating proactive and reactive counterfire while continually painting a picture of the artillery battle for the commander. Three areas were key. All soldiers in the S2 shop were actively involved in the intelligence preparation of the battlefield (IPB) process and in producing intelligence products. Second, our targeting methodology worked. Last, using a graphic intelligence summary (INTSUM) provided a way to show BDA and readily depict the array of enemy artillery on the battlefield. Figure 2 shows an example of a graphic INTSUM, in this case our estimate of

the OPFOR artillery laydown at the beginning of Phase I.

The graphic INTSUM not only showed the enemy artillery, but also the Div Arty's BDA. Every six hours, a graphic INTSUM was developed portraying the estimated number of artillery units, their locations and estimated strengths. BDA was assessed based on the type of targets attacked, expected damage based on volume of fire and BDA reports, the latter from division aviation and I Corps assets. The 115th FA Brigade sent the Div Arty S2 a mission fired report (MFR) every six hours to help develop the BDA. As an example, we assessed seven percent attrition per MLRS volley on counterfire targets.

The graphic INTSUM went to the

division FSE, G2 and subordinate battalions. It was a valuable tool as it provided an up-to-date, coordinated estimate of the enemy artillery posture.

Logistics. To sustain the Div Arty, each of the DS battalions maintained a habitual relationship with its forward support battalion (FSB). The 25th FA Detachment was supported by the main support battalion (MSB). The 45th Corps Support Group (Forward) provided GS to the division and DS to corps units operating in the division area. One of these corps units was the 115th FA Brigade.

The logistic support structure was adequate for the division, but not for our reinforcing brigade. The corps support battalion in the division support area

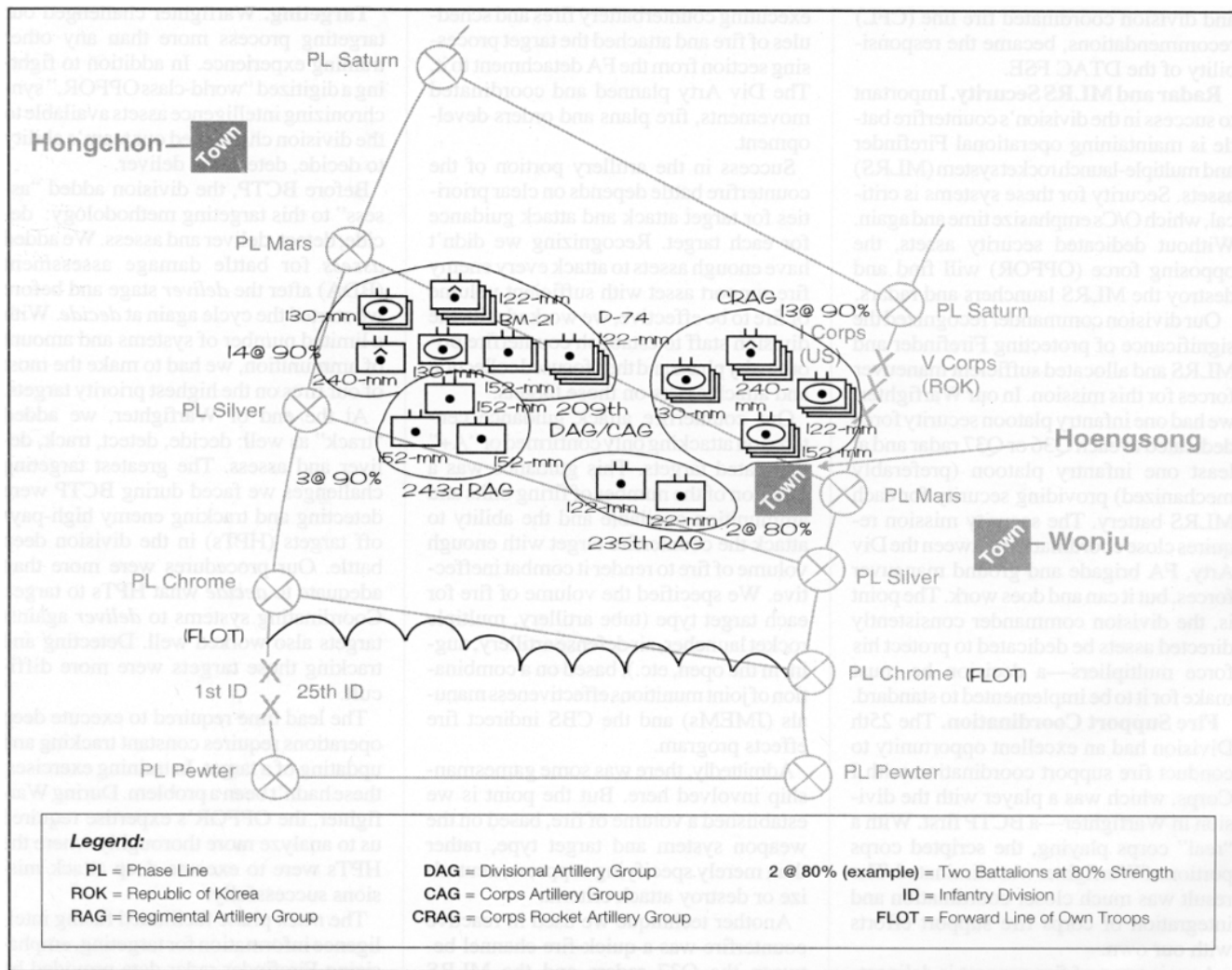


Figure 2: Example of a Graphic INTSUM. This INTSUM depicts the North Korean People's Army artillery posture at the beginning of Phase 1. The 25th Div Arty used graphic INTSUMs to rapidly disseminate intelligence information about enemy artillery. Updated every six hours, they were also used to reflect battle damage assessment (BDA).

(DSA) is designed to resupply corps assets on an area basis and can't adequately arm a reinforcing FA brigade. There's an argument to be made for a corps support battalion dedicated to a reinforcing brigade, a battalion that's more forward, reactive and mobile.

Of the many support missions performed, arming the artillery was the most demanding and time-sensitive. The division met this challenge by establishing four ammunition transfer points (ATPs), one ATP per brigade and one in the division rear. Additionally, to ensure timely support in a fast-paced battle, each of the FSBs established forward logistics elements (FLEs) capable of handling both 105-mm and 155-mm artillery rounds. These FLEs moved forward as soon as practical and ensured a continuous flow of ammunition.

On the other hand, ammunition for the MLRS battalion (a corps asset) was still being "pulled" from the division rear—corps throughput stopped in the DSA. A support package similar to the FSB with the capability to establish FLEs would have been much more effective.

The first order of business in sustaining ammunition supply was to verify its availability. In our Warfighter, there were no critical shortfalls identified in the controlled supply rate (CSR). Additionally, we established prepositioned ammunition caches before operations to ensure ammunition was available for critical events. Unfortunately, these caches were destroyed very early in the battle. Their loss caused a strain on the system to produce additional ammunition as well as provide the transportation assets to move it. We were able to keep the ammunition moving forward despite main supply route congestion, but continuous coordination was required.

The availability of major end items to replace those lost in battle was less satisfying than ammunition resupply. The two methods of replenishment were getting replacements from the corps stockage or returns from maintenance. Whereas battle damages and losses averaged about 40 percent overall, items replaced by corps or returned from maintenance averaged only about 20 percent. Our corps stockage was exhausted in the first 48 hours of the exercise; however, theater stockage daily provided approximately 10 percent of the required replacements.

Overall, logistics support of Div Arty

units for BCTP was a success. No major combat operations were denied or compromised due to non-availability of support.

Personnel. Personnel operations in the exercise were limited somewhat by the simulation. Nevertheless, S1s were integrated into all aspects of the BCTP train-up and execution and participated actively in the staff planning process.

Training and coordination sessions conducted by the division G1 before BCTP ensured all S1s understood reporting formats and requirements. Simple, concise reports enabled a unit to pass its personnel status clearly. Seminars led by the G1 on the nuances of personnel play in BCTP, as compared to real-world personnel operations, also helped set the tone for the exercise.

Wherever possible, the same people served as battalion S1s in the BSC in both the train-up and exercise. While this seems a minor point, it proved important in fine tuning coordination and quickly integrating changes and lessons learned during BCTP. Getting the BCTP team in place early in all staff sections paid big dividends.

Personnel play in BCTP focused largely on strength reporting and strength management. The Div Arty received relatively few personnel replacements and return-to-duty soldiers (short-term losses returning from hospitals, for instance) were rarely included in the exercise.

The Div Arty did experience significant personnel losses during Warfighter. The large number of losses and insufficient personnel replacements presented a real challenge to ensure remaining personnel were optimally used to meet mission requirements. In some cases, we cross-leveled personnel to fill critical shortages. Battlefield appointments filled leader shortages in one unit that received an inordinately high number of officer losses. Units were considered for reorganization to augment the personnel strength of firing batteries. One battalion was reconstituted in the course of the exercise.

While maintaining the Div Arty's personnel strength, we also monitored the 115th FA Brigade's strength. The brigade received some personnel replacements from corps, but its losses far exceeded personnel gains, and its strength fell below the number of personnel required to man its weapons. After determining corps would be unable to fill critical shortages in one situation, the Div Arty attached some of its replacements to the brigade.

Conclusion

There's a tendency in units to rotate personnel as soon as a BCTP is over. We recommend units retain these people for three to six months after Warfighter. When Warfighter ends, experienced personnel can capture improvements the unit needs to make, as indicated by the exercise; update SOPs; and establish sustainment training—all post-exercise follow-up, which is just as important as the preparation and execution stages of the BCTP campaign.

Before Warfighters, divisions can use BCTP assets and personnel to help prepare for the exercise. The O/Cs help train every division and corps in the Army; they're experts in doctrine and tactics. Most importantly, they're impartial and consistent.

Preparing for and executing our Warfighter was a tremendous team-building experience and a superb review of the Div Arty's capability to execute its mission-essential task list (METL). I used my first year in command to prepare for Warfighter, and it was well worth the effort. Warfighter Exercises are as valuable to a Div Arty as a Combat Training Center rotation is to a maneuver battalion or brigade. If a unit systematically follows a BCTP campaign plan, it'll be ready for Warfighter and ready for combat—the 25th Div Arty is!



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TCDC: Targets, Triggers and Killers

By Major Milton R. Ayala, USAR

A major training objective of the Tactical Commander's Development Course (TCDC) for future battalion and brigade commanders, taught at the Command and General Staff College at Fort Leavenworth, Kansas, is to synchronize battlefield operating systems (BOS) to produce maximum combat power at the decisive point. Fire support is one of the BOS battalion and brigade commanders must be able to synchronize.

What follows are some fire support lessons we, as TCDC students, learned in small group discussions and Janus simulation during TCDC Class 93-3. The lessons primarily pertain to fire support at the battalion task force level and below.

Defensive Operations

Successfully executing the reconnaissance/counter-reconnaissance fight by the scout platoon is essential in the defense. The scout platoon can deny the enemy the ability to observe friendly activity by calling for mortar and indirect fires. It can neutralize or destroy the enemy's divisional and regimental reconnaissance elements as they're acquired.

In executing the reconnaissance/counter-reconnaissance fight, we learned that mortars provide better smoke and illumination than Field Artillery. Mortars are more responsive because they're closer to the objective and can provide greater volumes of fire in shorter periods of time.

As the fight shifts to the main battle area, synchronizing and massing fires at the battalion level is highly effective in destroying the enemy's fighting capability. The key lesson we learned in massing fires is to focus attention and priority on planned targets rather than on targets of

opportunity. To be successful, top-down fire planning with bottom-up refinement, as described in *FM 6-20-10 Tactics, Techniques and Procedures for the Targeting Process*, is a must.

An important fire support tool employed at the task force level is the "fire support triggers and killers matrix" (see Figure 1 for an example). The matrix assigns responsibilities to the fire support team (FIST) and combat observation lasing team (COLT) for acquiring and attacking targets. Through experience in the Janus simulation, we concluded the COLT is best suited for attacking stationary or slowly moving targets, primarily those found in the second echelon. This is because the COLT must position itself so "angle T" (the angle between the observer-target line and gun-target line) is less than 800 mils, thus somewhat limiting its ability to maneuver and track fast-moving first-echelon targets.

During the main battle, obstacles supported by direct and indirect fires can attrit the enemy severely. Family of scatterable mines (FASCAM) can turn

and channel the enemy into friendly engagement areas. Similarly, commanders can use smoke to disrupt and delay the enemy's advance and (or) screen friendly activity.

Offensive Operations

As is the case in the defense, the reconnaissance/counter-reconnaissance fight can be instrumental in the success of the offense. Specifically, the scout platoon can help modify and adjust preparation fires, refine priority targets and update the target list, all of which can result in decisively engaging the enemy with indirect fires early.

The general rule in the offense, we learned, is to keep fire planning simple. At the battalion task force level, fire supporters should limit Field Artillery priority targets to three and mortar priority targets to two. By limiting the number of priority targets, commanders can more effectively concentrate their decisive fires. Commanders can use these few carefully selected priority targets as quick reference points for shifting fires and controlling the battle.

As in the the defense, mortars are very useful to provide smoke on the objective and illumination rounds to mark for close air support (CAS).

The fire support execution matrix (FSEM) is an invaluable tool in synchronizing fire support. Also useful is a comprehensive fire support overlay depicting artillery and mortar positions, obstacles, range fans, fire support coordinating measures (FSCM) and targets, all of which facilitate rapid understanding of the maneuver battle.

The development of a combined attack guidance/high-payoff target (HPT) matrix (example in Figure 2), accelerates the decide phase of targeting (*FM 6-20 Fire Support in the AirLand Battle*). The matrix prioritizes attack systems against each HPT and specifies when and how each

Event	Trigger	Backup	Killer	Backup	Target
Lead MRR at NAI 2 (H + 10)	OP 1	OP 2	OP 1	OP 2	Group: A3B

Legend: MRR = Motorized Rifle Regiment
OP = Observation Post NAI = Named Area of Interest

Figure 1: Fire Support Triggers and Killers Matrix. This matrix assigns responsibilities to fire support observation assets (FIST and COLT). For each target, a primary and backup observer is identified for the trigger and the kill. This redundancy ensures the target will be engaged successfully.

Attack System	High-Payoff Target by Priority		
	Command Observation Post	2S6 Howitzer	Motorized Rifle Company (MRC)
Direct Support (DS) Field Artillery	<div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; margin: 0 auto;">1</div> TLE: 100 m Age: 1 hr When: 1 How: N Volleys: Btry 4	<div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; margin: 0 auto;">1</div> TLE: 100 m Age: 1 hr When: A How: S Volleys: Btry 4	<div style="border: 1px dashed black; width: 20px; height: 20px; text-align: center; margin: 0 auto;">2</div> TLE: 100 m Age: 1/2 hr When: 1 How: S Volleys: Bn 2
Close Air Support (CAS)	<div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; margin: 0 auto;"></div> TLE: Age: When: How: Volleys:	<div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; margin: 0 auto;"></div> TLE: Age: When: How: Volleys:	<div style="border: 1px dashed black; width: 20px; height: 20px; text-align: center; margin: 0 auto;">1</div> TLE: 500 m Age: 1/2 hr When: 1 How: D Volleys: Per SOP
Mortar	<div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; margin: 0 auto;">2</div> TLE: 50 m Age: 1 hr When: 1 How: S Volleys: 4	<div style="border: 1px solid black; width: 20px; height: 20px; text-align: center; margin: 0 auto;">2</div> TLE: 50 m Age: 1 hr When: 1 How: S Volleys: 4	<div style="border: 1px dashed black; width: 20px; height: 20px; text-align: center; margin: 0 auto;">3</div> TLE: 50 m Age: 1/2 hr When: 1 How: S Volleys: 8

Legend:

TLE = Target Location Error	I = Immediate	D = Destroy
m = Meter(s)	A = As Acquired	Btry = Battery
Age = Age of Target Report	N = Neutralize	Bn = Battalion
	S = Suppress	SOP = Standing Operating Procedures

Figure 2. Attack Guidance/High-Payoff Target (HPT) Matrix. This combined matrix provides the commander a succinct, user-friendly aid that helps expedite the decide phase of the targeting process. Attack systems are prioritized against each HPT. For example in the third column, the commander has decided his first priority is to engage the MRC with CAS, as indicated by the number (1) in the box. If CAS is unavailable, he'll attack it with DS artillery (2) and, finally, with mortars (3).

target is to be engaged. We tailored the HPT list to support the close fight rather than simply replicating the higher headquarter's list.

With the fire support triggers/killers matrix, the combined attack guidance/HPT matrix, the FSEM and the comprehensive fire support/obstacle overlay, the fire supporter has all the documents he needs to synchronize fires. These four documents take the place of elaborate operation plans and orders, lengthy target lists and multiple overlays. In short, they keep fire planning and execution simple.

The rehearsal is vital to synchronizing fire support. We found a radio/telephone rehearsal most useful for synchronizing the FSEM. It's especially useful in assigning maneuver units responsibility

for lifting and shifting fires during the assault phase on the objective.

Conclusion

TCDC gives future commanders a better understanding of integrating fire support with maneuver. Moreover, at the task force level and below, TCDC teaches students the importance of keeping fire support planning and execution simple. With just a few well-prepared fire support documents, the commander can synchronize resources for decisive fires at the critical time and place on the battlefield—a capability he can't afford to be without.



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ROCKIN' with CSS

by Major Stuart G. McLennan III

Synchronization is

“The ability to focus resources and activities in time and space to produce maximum relative combat power at the decisive point.”

FM 100-5 Operations

At Arrowhead Hill live-fire area at the National Training Center (NTC), Fort Irwin, California, video footage of the battle flickered across the screen as the music soundtrack blared "I wanna Rock!" As "Pacesetter" logisticians found their seats, NTC combat trainers prepared to facilitate our first combat service support (CSS) after-action review (AAR). What we were about to learn would cause us to change the way we synchronized operations in our battalion. We would soon be Rockin' with CSS.

The 1st Brigade, 4th Infantry Division (Mechanized) deployed from Fort Carson, Colorado, to the NTC from 26 March to 24 April 93 for a heavy-light rotation. While not habitually associated, the Pacesetters of the 3d Battalion, 29th Field Artillery (155-mm self-propelled) were direct support (DS) to the 1st Brigade for live-fire. C Battery, 2d Battalion, 11th Field Artillery (105-mm towed) from the 25th Infantry Division (Light) at Schofield Barracks, Hawaii, was attached to the Pacesetters. The light battery's leaders were present during our battalion's train-up, but we had not conducted sustained live-fire operations together before the NTC rotation.

This article explains how CSS rock drills improve the synchronization of battalion operations, especially during heavy-light operations. In reality, success depends in large part on how well battalion operations are synchronized

with supported and supporting units. Only when a brigade operates as a combined arms team can it truly synchronize operations at the NTC—or in war. I focus on how CSS rock drills enabled us to synchronize our internal operations, but it's important to know what drove us to develop this technique.

The Challenge: Synchronization

Historically, successful commanders at all levels have recognized the importance of synchronizing tactics and logistics. Tactically, our battalion was ready for the NTC. Our command post (CP), firing batteries and fire support operations were our strengths, honed during months of intense training.

Unfortunately, even the resource-intensive "Iron Point"—the 4th Infantry Division's combined arms training program—couldn't adequately stress the brigade's logistics systems. Time, funds and training space limited

opportunities for full brigade operations with an established brigade support area (BSA). So while we developed a battalion logistics infrastructure, we did so in relative isolation to the brigade we would depend on at the NTC.

From a logistician's perspective, synchronization requires a team capable of focusing resources and logistics

activities. During Iron Point, we built our team. The executive officer (XO) supervised logistics operations. The S4 supervised the administrative and logistics operations center (ALOC) in the combat trains, represented the logistics battlefield operating system (BOS) during the orders process and coordinated logistics operations with adjacent unit ALOCs. The battalion maintenance officer (BMO) directed maintenance and recovery operations from the ALOC. The S1 coordinated personnel replacement operations and supervised the battalion support operations center (BSOC) in the field trains. The service battery first sergeant coordinated logistics resupply point (LRP) operations. The headquarters and headquarters battery (HHB) first sergeant coordinated logistics for the combat trains and the CP. The firing battery first sergeants coordinated logistics through their battery operations centers (BOCs). The supply sergeants coordinated supplies and services from the field trains. The ammunition sergeant coordinated ammunition draw, combat loading, forward movement to the combat trains and resupply. The maintenance sergeant coordinated contact teams and field trains maintenance operations. The prescribed load list (PLL) sergeant coordinated Class IX (repair parts) resupply. Finally, the food service sergeant coordinated our biggest morale intangible: quality chow. Our logistics team was trained and had internal systems in place when we deployed to Fort Irwin.

The Pacesetters faced a synchronization challenge upon arriving at the NTC. The 4th Forward Support Battalion (4th FSB) task organization, external standing operating procedures (SOP) and resupply windows were tailored to support the 1st Brigade in force-on-force and live-fire operations. A Reserve Component supply and services (S&S) battalion augmented the 4th FSB for live-fire. The 4th FSB provided Class III (petroleum, oils and lubricants) and Class IX, and the S&S battalion provided the remainder of our supplies, maintenance and services support.

We didn't fully appreciate the ramifications of this split support relationship until we deployed into the training area. Initially, the synchronization of logistics support from two geographically separated organizations consumed Pacesetter logisticians. This was duly noted during the initial CSS AAR, as were disconnects



in our internal operations. Once we integrated the S&S battalion, we were able to focus on internal operations.

During Iron Point at Fort Carson, we participated in 1st Brigade terrain model rehearsals. These rehearsals normally addressed tactical operations with logistics coordinated as an adjunct. It was only after our first NTC AAR that the idea for a battalion-level CSS rock drill—an NTC terrain model rehearsal—surfaced. Twenty-four hours later, we were ready to rock.

The CSS Rock Drill

Two hours before an evening resupply, the BMO and S4 departed the ALOC en route to the LRP. Their mission was to prepare a terrain model to scale. Attendees that evening were the XO, command sergeant major (CSM),

battalion maintenance technician (BMT), physicians assistant (PA), battery first sergeants and the NCO-in-charge (NCOIC) of the medical section. With local security established and while battery supply sergeants conducted the LRP, the S4 and BMO issued a 1:50,000 scale CSS overlay and conducted our first rock drill.

The rock-drill kit initially consisted of 3x5 cards and string, but it would become more robust over time. Mission, enemy, terrain, troops and time available (METTT) dictated when and where subsequent rock drills were conducted and the briefing contents. As a minimum, the following topics should be considered for rock drill briefings.

- The enemy situation, especially the rear area threat. The impact of weather on logistics operations, supply routes and movement. The supported unit's mission.

The commander's intent for maneuver and fires. The general concept of logistics support. (XO)

- An overview of the concept of operations and the Field Artillery support plan. Critical events during the operation (e.g., passage of lines and unit displacements). The location and task organization of supporting units and the location of potential LRP sites. (S4)

- Class I (Subsistence). The next day's ration cycle. Recommended times to prepare hot meals (rations usually were issued at the evening LRP). The plan for water resupply, especially for the light battery. (S4)

- Class III (POL). The bulk and package petroleum, oils and lubricants (POL) forecast. The location of organic M978 fuel tankers. Refueling plans and unit priorities. (S4) Note: If the battalion is to conduct a resupply on the move (ROM), the service battery commander should attend and brief the ROM plan.

- Class IV (Construction Material). Resupply and transportation requirements for fighting position materials, especially for the light battery. (S4)

- Class V (Ammunition). The configuration of ammunition vehicles—by caliber and type—in the combat trains. The plan for forward movement of ammunition and the priority for pinpoint or ROM resupply. (S4)

- Class IX (Repair Parts). Parts requests and delivery procedures, especially 03 priority parts. Radio, the tactical fire direction system (TACFIRE), AN/TPQ-36 radar, position and azimuth determining system (PADS), meteorological and communications security equipment repair and evacuation procedures. (BMO)

- The plan for moving the combat trains. (S4)

- Supply routes and military police circulation control. Location of the light line. (S4)

- Unit maintenance collection point (UMCP) and recovery operations. Evacuation and self-recovery criteria. The location, composition, radio frequency, call signs and movement plan for the UMCP. (BMO)

- Updates to battle roster numbers and reporting procedures. Personnel replacement operations and priorities. (S4)

- The location of our own and adjacent ambulance exchange points (AXP) and movement plans. (PA)

- Battalion aid station (BAS) operations, to include location, forward positioning and movement plans. Procedures for emergency Class VIII (medical supplies) resupply of unit medics and combat lifesavers. (PA)



- Casualty evacuation procedures and routes to AXPs, especially for the light battery. Mass casualty (MASCAL) procedures. "Dirty" routes for chemical casualties and collection points. Decontamination unit locations and priorities. (PA)

- Visual recognition signals, especially from the air. Also, radio frequencies and call signs for those not operating secure on the battalion administration and logistics frequency. (S4)

The End State

The CSS rock drill immediately improved the synchronization of Pacesetter operations. Logisticians were better able to anticipate requirements and to man, arm, fuel, fix, transport and protect the force. Our logistics systems became more responsive because we discussed plans and contingencies at the rock drill. Of singular importance, the battery first sergeants were now fully integrated into the logistics plan.

The rock drill inculcated flexibility. Supporting unit resupply windows varied daily, such as windows for ration break, ammunition draw, repair parts resupply and mail distribution. Delays at the main support battalion or brigade support area had a domino effect on plans designed to provide timely logistics support to the battalion. When supplies were received earlier or later than expected, resupply plans were adjusted. For example, first sergeants now routinely conducted route reconnaissance. The impact of changing LRP locations in the desert at night was minimized.

The rock drill facilitated heavy-light operations. Before the NTC rotation, the light battery was not fully integrated into our logistics operations. At the NTC, ammunition requirements, casualty evacuation, water resupply, construction materials and transportation assumed greater urgency. The rock drill provided a forum to address the logistics requirements of a light battery attached to a mechanized battalion.

The rock drill facilitated timely ammunition resupply. Pinpoint resupply was the norm at the NTC; however, our firing batteries didn't always move or expend munitions as planned. On several occasions, the ALOC implemented contingency plans and coordinated changes with ammunition convoys moving across the desert. First sergeants then linked up with ammunition convoys and guided them into position. The right

munitions were delivered to the right unit at the right time.

Lives were saved because casualties were moved rapidly to their own and adjacent unit medical facilities. Rock drills covered MASCAL procedures, adjacent unit capabilities and route reconnaissance—both "clean" and "dirty."

On one occasion, counterbattery fires inflicted significant casualties on our light battery. While the tactical operations center (TOC) was moving, the ALOC massed the battalion's MASCAL resources in support of the light battery. Instead of flooding our medical facilities with casualties, they were dispersed to adjacent units' AXP and BAS. On another occasion, a chemical strike rendered a primary "clean" route untenable. The first sergeant switched to an alternate route, rendered a report and delivered his casualties to the BAS without further loss.

Logistics command and control node battle tracking improved significantly. The rock drill facilitated a thorough understanding of the maneuver plan. Overlays and status charts improved dramatically in the ALOC and BSOC. Timely and accurate reports flowed unsolicited from the BOCs. The ALOC and BSOC routinely passed reports and battle updates via mobile subscriber equipment (MSE). As a result, logisticians made more informed decisions regarding personnel replacements, resupply operations and maintenance priorities. Logistician heads from the battery to the battalion levels were now fully "in the game."

The combat trains and UMCP moved in congruence with the battle, the tempo of which is difficult to predict. On several occasions, the supported maneuver unit was ahead of or behind the plan. Accurate battle tracking allowed the ALOC to coordinate the displacement of the combat trains, move the UMCP and adjust LRP plans without jeopardizing logistics support to the CP or firing batteries.

Recovery operations facilitated the employment of fire support assets. Organic M578 recovery vehicles were consolidated under the battalion's control but routinely operated independently to recover howitzers. The BMT addressed priorities, routes and firing battery positions with each M578 crew after the rock drill. M548 ammunition carrier vehicles and below usually self-recovered, and first sergeants discussed plans for mutual support. On several occasions, howitzers were rapidly recovered to

subsequent firing positions and integrated back into the fight.

On one occasion, an M578 crew was placed under the operational control of (OPCON to) a military intelligence team to tow an TSQ-138 Trailblazer through the battle. The rock drill provided an opportunity to synchronize this unique fire support mission.

Conclusion

In Building 988 at the NTC, video footage of the final battle flickered across as the music soundtrack blared "Bad to the Bone!" Once Pacesetter leaders found their seats, NTC combat trainers facilitated our final battalion AAR. Overall the 1st Brigade performed superbly at the NTC. Fire support was a strength and CSS rock drills had a positive impact on our operations. We had changed the way tactics and logistics were synchronized in the battalion and validated the importance of synchronizing logistics with the remaining BOS.

The CSS rock drill helps logisticians synchronize battalion, brigade and supporting unit operations, especially during heavy-light operations. When logisticians thoroughly understand the tactical plan, they can execute logistics operations and contingencies in the absence of orders but within the commander's intent.

Rock drills help sustain battle tempo and deliver massed fires at the decisive times and places. Artillerymen are encouraged to take the lead and refine the process until the entire combined arms team is Rockin' with CSS.



Major Stuart G. McLennan III is an Assistant Fire Support Coordinator in the 4th Infantry Division (Mechanized) Fire Support Element, Fort Carson, Colorado. He previously served as Executive Officer of the 3d Battalion, 29th Field Artillery, also at Fort Carson. Other assignments include serving as the Director of Brigade Scenarios for the Training and Doctrine Command (TRADOC) Analysis Command at Fort Leavenworth, Kansas; Assistant Chief of Staff G3 (Plans) for the 1st Infantry Division (Forward) in Germany; and Commander of B Battery, 2d Battalion, 34th Field Artillery, 75th Field Artillery Brigade at Fort Sill, Oklahoma. Major McLennan is a graduate of the Command and General Staff College at Fort Leavenworth.

The Arthur P. Lombardi Battle Training Center

The 101st Airborne Division (Air Assault) proudly opened its Arthur P. Lombardi Battle Training Center (BTC) at Fort Campbell, Kentucky, on 22 April 1993. BTC is a centralized, high-tech training facility dedicated to planning, coordinating and synchronizing battlefield operating systems (BOS). In an era of declining dollars and continuing requirements, BTC offers commanders a cost-effective way to train their leaders and battle staffs. It provides a glimpse into the Army's training future.

BTC evolved from concept to reality in one year. The facility was an old Army and Air Force Exchange Service movie theater converted into the BTC. The 101st Division Artillery (Div Arty) designed the center and remodeled the facility as a self-help project, staying within a \$300,000 budget—quite a challenge.

The Div Arty received approval to name the BTC after a distinguished member of the 320th Field Artillery Regiment, Colonel (Retired) Arthur P. Lombardi. Colonel Lombardi's distinguished career included four tours at Fort Campbell. Entering military service in 1943, he rapidly rose through the enlisted ranks and received a battlefield commission in March 1945. During his career as a fire supporter, he commanded at all levels from a howitzer section through the XVIII Airborne Corps Artillery. He served as Honorary Colonel of the 320th Field Artillery Regiment for six years. Colonel Lombardi's exemplary career epitomizes the uncompromising training standards and selfless service required of today's leaders.

BTC consists of four main areas: a multipurpose training area; two training set, fire observation (TSFO) rooms; a sand table rehearsal area; and four fire coordination exercise (FCX) rooms. The areas can be used individually or in combination, depending on unit training requirements.

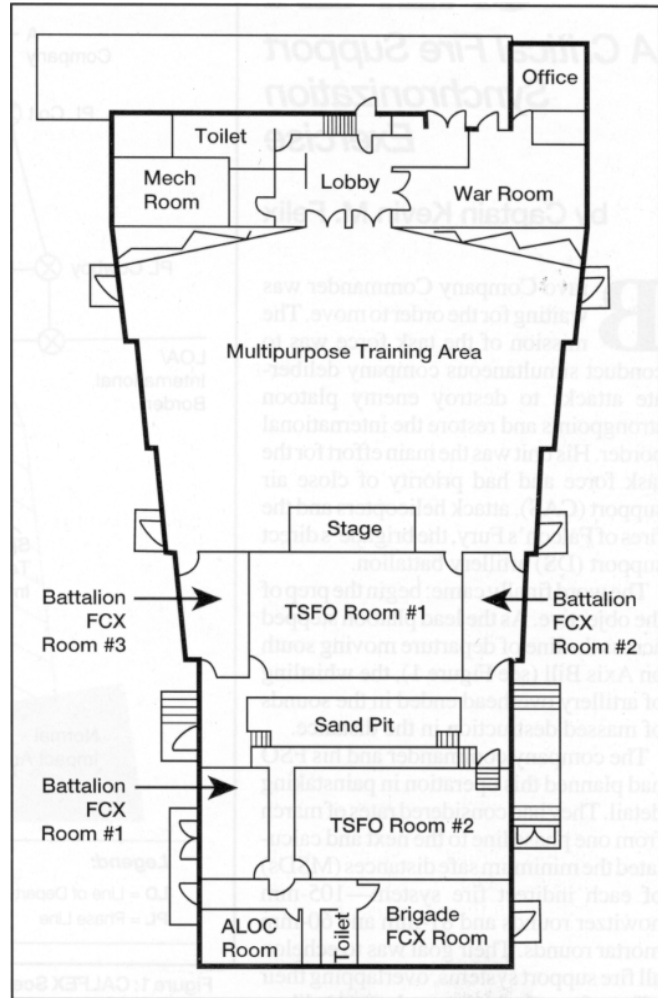
The multipurpose training area is used for after-action reviews (AARs) and battle leader training. This area seats 450 personnel and has a computer-assisted projection system. A video projection system is also available.

The two TSFO rooms, which are used heavily, provide observed fire training for Fort Campbell units, both divisional and tenant. The arrival of the guard unit armory device, full-crew interactive simulation trainer (GUARD FIST II and IIA), which will replace the TSFO, will further enhance the quality of the BTC's observed fire training.

The sand table area allows units to conduct detailed synchronization rehearsals. The audience has a "bird's-eye" view of the operation under analysis and can move easily around the table to focus on particular areas of importance.

The four FCX rooms support battle staff training. Three are designed for battalion staffs and one for the brigade staff, and all are hooked up to the battalion-brigade battle simulation (BBS) system.

A centralized monitoring area with audio and video feeds to each of the FCX rooms allows the senior leadership to observe leader and battle staff training unobtrusively. A small senior leadership conference area and office space for the facility



101st Airborne Division's Battle Training Center. The facility includes two training set, fire observation (TSFO) rooms; a sand-table rehearsal area; four fire coordination exercise (FCX) rooms; a multipurpose training area for AARs and battle leader training; and an administration and logistics operations center (ALOC) room.

manager completes this area.

The Div Arty provides special duty personnel to operate the facility. One NCO is assigned permanently as the BTC facility manager, and the support cycle Field Artillery battalion provides one NCO and three soldiers to maintain and operate the facility.

The Arthur P. Lombardi BTC represents the innovative use of a facility to enhance training, ensuring the 101st Airborne Division (Air Assault) stays prepared for its next *Rendezvous with Destiny!*

101st Airborne Division (Air Assault)
Artillery Fort Campbell, Kentucky

Company CALFEX

A Critical Fire Support Synchronization Exercise

by Captain Kevin M. Felix

Bravo Company Commander was waiting for the order to move. The mission of the task force was to conduct simultaneous company deliberate attacks to destroy enemy platoon strongpoints and restore the international border. His unit was the main effort for the task force and had priority of close air support (CAS), attack helicopters and the fires of Falcon's Fury, the brigade's direct support (DS) artillery battalion.

The word finally came: begin the prep of the objective. As the lead platoon stepped across the line of departure moving south on Axis Bill (see Figure 1), the whistling of artillery overhead ended in the sounds of massed destruction in the distance.

The company commander and his FSO had planned this operation in painstaking detail. They had considered rates of march from one phase line to the next and calculated the minimum safe distances (MSDs) of each indirect fire system—105-mm howitzer rounds and 81-mm and 60-mm mortar rounds. Their goal was to echelon all fire support systems, overlapping their effects from the highest to lowest caliber, as the company moved toward the enemy's trench line. Success was defined as never having to slow or stop the company's movement to maintain MSDs.

The company moved south with the 1st and 2d Platoons along Axis Bill. 3d Platoon, which had the support mission, moved southeast to link-up with the task force's armor platoon slice. Then, from the support position, the two platoons would provide direct fires into the trench line during the company's final assault.

The platoon leader of the lead platoon and his forward observer (FO) knew the plan in detail. The FO knew the time of flight of mortar rounds to the objective to ensure the company moved forward with continuously synchronized fires. The platoon's lead squad moved inside the 105-mm MSD just beyond Phase Line (PL) Colt. (The FO knew where the MSD started by pacing off the company's

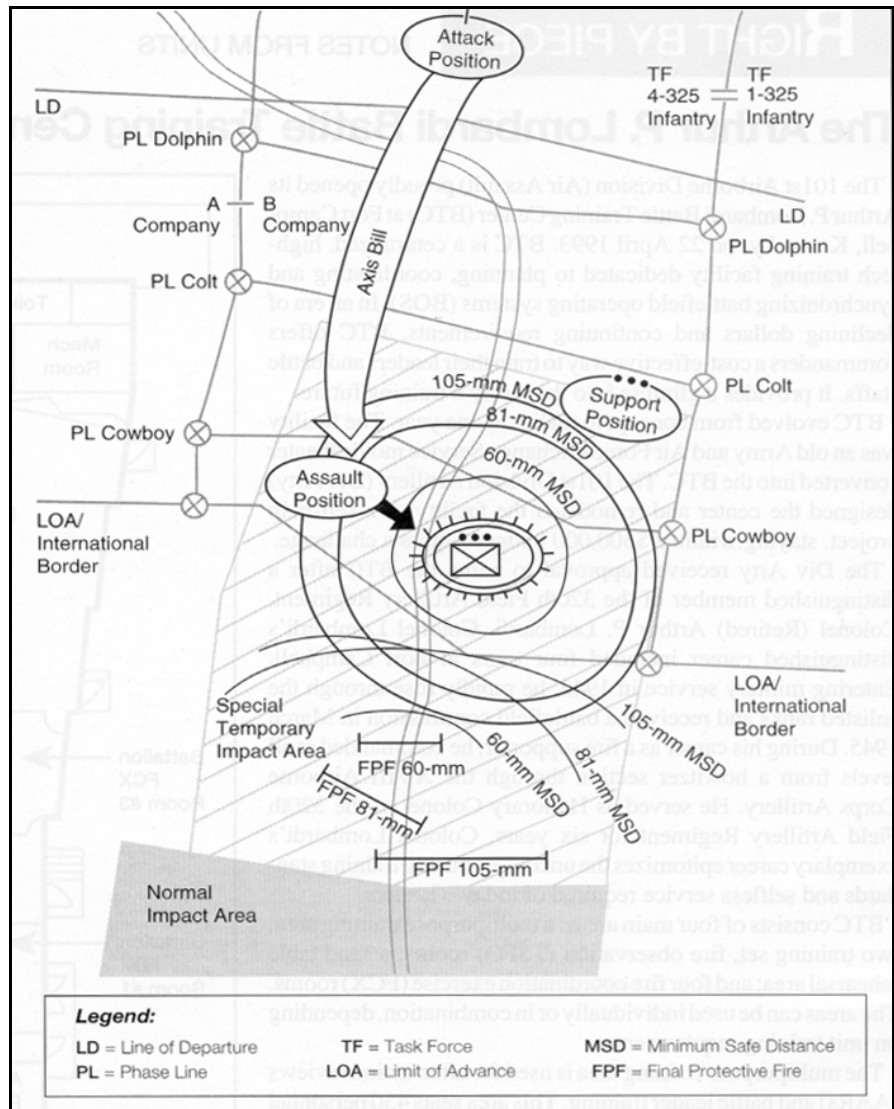


Figure 1: CALFEX Scenario. Bravo Company's mission is to conduct a deliberate attack along Axis Bill to destroy the enemy platoon strongpoint and restore the international border. Fire support is echeloned to allow overlapping fires from the highest to lowest caliber and synchronized with the company's movement to permit the continuous, safe maneuver of forces.

forward progress, called a pace count.) Suddenly, the echeloned fires of the 81-mm mortars crushed a bunker along the trench line. Simultaneously, the 105-mm fires shifted to blocking targets to seal off the enemy's egress routes.

The company never hesitated in its movement toward the objective. The task force commander's intent had been met—the company commander had synchronized fire support with his scheme of maneuver.

This scenario is an example of a combined arms live-fire exercise (CALFEX) conducted recently at Fort Bragg, North Carolina, by the 82d Airborne Division. The CALFEX is essential for training maneuver leaders to

synchronize fire support with their other battlefield operating systems (BOS).

Such an exercise is conducted in danger-close support of maneuvering forces. It emphasizes joint and combined arms operations and helps develop a far greater level of trust between fire support and maneuver than in other training exercises.

This article describes the planning, preparation and rehearsals necessary to synchronize maneuver and fire support in a first-class company CALFEX.

Planning Phase. As there are many training events that compete for time, land and ammunition during the fiscal

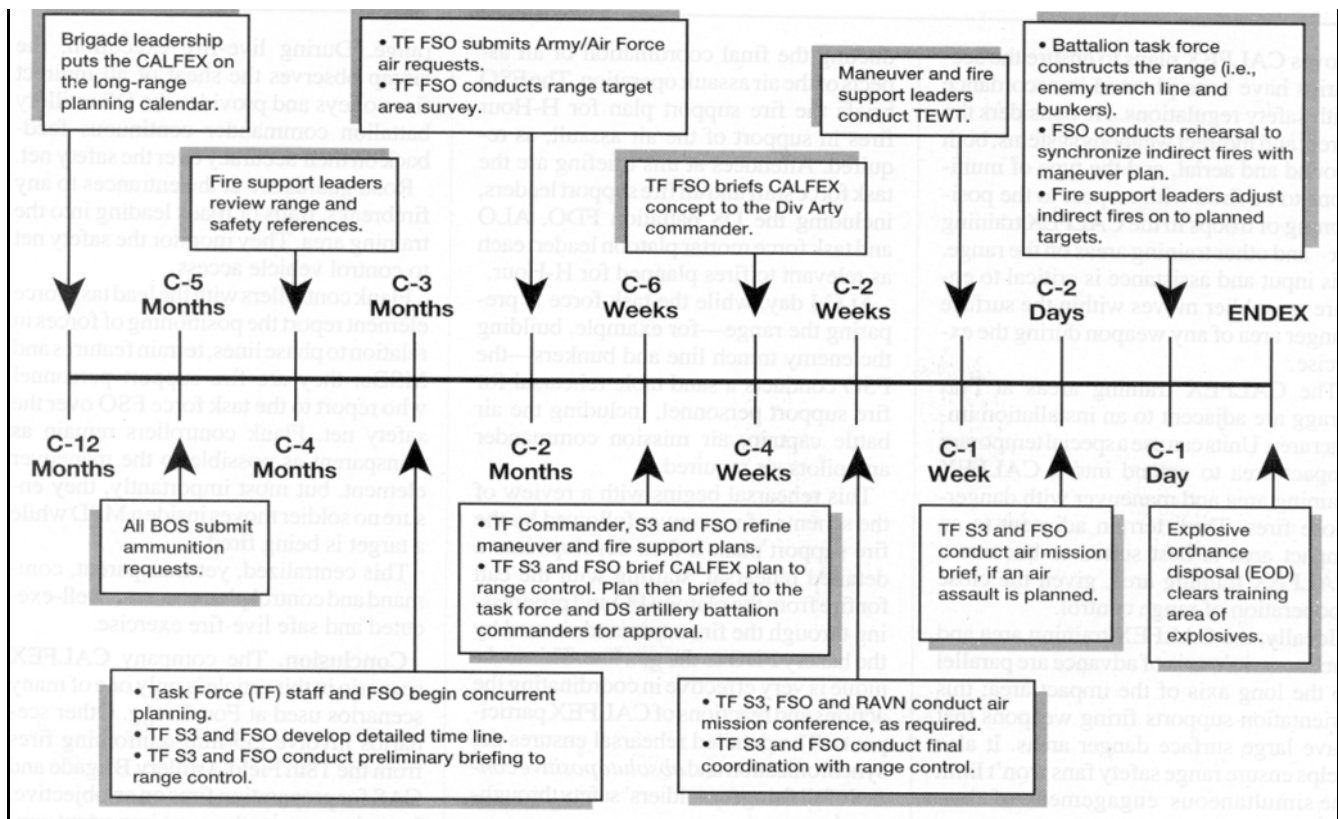


Figure 2: Company CALFEX Planning and Briefing Time Line.

year, leaders from the top down must establish the CALFEX as priority training and commit resources to it early. Planning begins at C-12 months when the brigade commander, maneuver battalion commanders and the DS battalion commander forecast the CALFEX on the brigade's long-range training calendar and determine the unit or units to train. Ideally, the training calendar will allow for squad live fires and platoon CALFEXs preceding the company CALFEX.

At C-5 months, maneuver brigade and DS battalion planning focus on ammunition forecasts and requests for support from the BOS, such as engineers, armor, aviation (both attack and lift), reinforcing artillery and CAS aircraft, as required. At C-4 months, fire support leaders reread pertinent post range regulations and local live-fire safety letters. For the CALFEX in the scenario, we used the 82d Division Artillery's (Div Arty's) memorandums that cover in detail everything from calculating MSDs and executing danger-close fires to developing and executing H-Hour fires in support of an air assault.

The battalion or task force FSO, the primary action officer for the CALFEX, and the task force staff begin concurrent planning at C-3 months. Together, they

develop a detailed time line for executing the exercise (see Figure 2).

The Task Force S3 and FSO brief the range control operations officer on the preliminary plan for the exercise. He assists in the initial planning by deconflicting other range activities. The FSO then requests the task force commander approve the time line as soon as possible to support timely requests for CAS through the brigade air liaison officer (ALO).

At C-2 months, the FSO must request CAS for specific blocks of time. Because CAS blocks are difficult to change once approved, a finalized time line ensures CAS is locked-in to support the exercise. Ideally, CAS will be available on alert at a local airfield to provide greater flexibility during the exercise.

Also at C-2 months, the FSO submits Army air requests through the regimental aviation liaison officer (RAVN) for both attack assets and an OH58 helicopter, the latter to act as the aircap. An aircap is an aerial platform that assists in safety command and control.

The FSO conducts a target area survey with the DS battalion survey team and uses a ground/vehicular laser locator designator (G/VLLD) or laser range finder to locate targets accurately for

engagement during the CALFEX. This allows the FSO to compute and visualize MSD lines for concurrent planning with maneuver.

At C-6 weeks, the FSO and task force staff, with guidance from the commander, refine the fire support and maneuver plans. This synchronizes all assets in support of the mission. At the same time, the FSO updates the DS artillery battalion commander and his S3 on revisions to the fire support plan to ensure the changes are doctrinally correct and supportable.

Once the revised plans have been approved by the task force commander, his S3 and FSO brief the range control operations officer and key players, including a representative from each BOS. The key to making an impact on the youngest soldier in the unit is to adjust the fires in danger close—not 1,000 meters or even 600 meters from the forward line of troops but as close as peacetime safety restrictions allow (Army Regulation 385-63 Policies and Procedures for Firing Ammunition for Training, Target Practice and Combat). This briefing is the most critical part of the planning process.

The range control operations officer approves

CALFEX plans to ensure the scenarios have been planned in accordance with safety regulations. He considers the direct and indirect weapons systems, both ground and aerial, and the type of munitions to be fired with respect to the positioning of troops in the CALFEX training area and other training areas on the range. His input and assistance is critical to ensure no soldier moves within the surface danger area of any weapon during the exercise.

The CALFEX training areas at Fort Bragg are adjacent to an installation impact area. Units can use a special temporary impact area to extend into a CALFEX training area and maneuver with danger-close fires. Thus, terrain adjacent to an impact area is best suited to become a CALFEX training area, given the close cooperation of range control.

Ideally, the CALFEX training area and the scenario's axis of advance are parallel to the long axis of the impact area; this orientation supports firing weapons that have large surface danger areas. It also helps ensure range safety fans won't limit the simultaneous engagement of close and deep targets

Finalizing Phase. After the task force S3 and FSO have coordinated with range control, they brief the final plan to the task force commander and the DS artillery battalion commander for approval. At C-4 weeks, the task force FSO briefs the concept of the fire support plan to the Div Arty commander for his approval.

At C-2 weeks, if an air assault is planned, the task force staff, along with the FSO and brigade RAVN, conduct an air mission conference for the attack and lift aircraft company commanders. ALOs attend the conference to help deconflict the airspace over the training area.

At C-1 week, task force leaders, fire support, battery commanders and fire direction officers (FDOs) conduct a tactical exercise without troops (TEWT) on the terrain. The task force commander, his FSO and the DS battalion commander lead the TEWT. The exercise provides leaders a detailed briefing on all phases of the operation on the actual terrain, to include the plan for synchronizing fire support. The objective is for leaders to understand clearly where the MSDs are for each weapon system in relation to phase lines and features on the ground.

At C-2 days, if an air assault is planned, the task force staff briefs the air mission commander and air battle captain, conducting the final coordination of all

aspects of the air assault operation. The FSO briefs the fire support plan for H-Hour fires in support of the air assault, as required. Attendees at this briefing are the task force staff and all fire support leaders, including the DS battalion FDO, ALO and task force mortar platoon leader, each as relevant to fires planned for H-Hour.

At C-1 day, while the task force is preparing the range—for example, building the enemy trench line and bunkers—the FSO conducts a sand table rehearsal for fire support personnel, including the air battle captain, air mission commander and pilots, as required.

This rehearsal begins with a review of the scheme of maneuver followed by the fire support plan. It then develops into a detailed rehearsal, starting with the call for fire from the platoon FO and progressing through the fire commands issued by the battery FDO to the gun line. This technique is very effective in coordinating the actions and reactions of CALFEX participants. The detailed rehearsal ensures the synchronization and *absolute positive control* of all firing for soldiers' safety throughout the exercise.

The DS battalion commander then reviews all live-fire safety procedures with the battery commanders and FDOs before adjusting rounds on targets. The remainder of the day is dedicated to battalion and battery rehearsals, to include applying firing data at the gun line.

Execution Phase. The CALFEX is conducted with a centralized command and control structure. Using parallel communications nets, an aircap, road guards and flank controllers ensures positive control of fires and safe operations.

Two important communications nets are used during the CALFEX: a fire net and a safety control net. Fire support assets engage targets passed over the fire net but only after the task force FSO has cleared each on the safety net. The FSO clears planned fires on the safety net well before their execution to avoid hindering an otherwise safe scenario. The DS battalion commander, who is the senior fire support controller, monitors the safety net.

An OH58-type helicopter manned by the brigade FSO is usually the CALFEX aircap. Before the exercise, the aircap helps adjust danger-close fires, especially on those targets that can't be observed from the ground. Just before live firing begins, the aircap sweeps the CALFEX training area, looking for personnel down

range. During live-fire execution, the aircap observes the sheaf of all indirect fire volleys and provides the DS artillery battalion commander continuous feedback on their accuracy over the safety net.

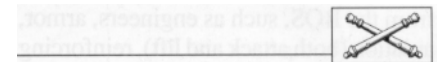
Road guards are at the entrances to any firebreaks, trails or roads leading into the training area. They monitor the safety net to control vehicle access.

Flank controllers with the lead task force element report the positioning of forces in relation to phase lines, terrain features and MSDs; they are fire support personnel who report to the task force FSO over the safety net. Flank controllers remain as transparent as possible to the maneuver element, but most importantly, they ensure no soldier moves inside a MSD while a target is being fired.

This centralized, yet transparent, command and control plan ensures a well-executed and safe live-fire exercise.

Conclusion. The company CALFEX scenario in this article is only one of many scenarios used at Fort Bragg. Other scenarios involve 155-mm reinforcing fires from the 18th Field Artillery Brigade and CAS for preparation fires on an objective. In each scenario, the most important consideration is integrating and synchronizing fire support assets to safely support the maneuver commander's intent.

These exercises are essential to train maneuver forces about fire support. They demand intense communications between maneuver commanders and their FSOs. The maneuver leader learns to rely on his fire supporter to advise him on the status of indirect fires and ensure his soldiers don't move inside an MSD. Thus, the maneuver leader learns the importance of echeloning fire support systems in executing his scheme of maneuver while his soldiers begin to see and feel the awesome destructive power of fire support.



Captain Kevin M. Felix, until recently, was the Battalion Fire Support Officer (FSO) for the 4th Battalion, 325th Airborne Infantry Regiment in the 82d Airborne Division, Fort Bragg, North Carolina. Currently, he's a student at the Defense Language Institute, Monterey, California. During Operation Desert Storm, he served as the Targeting Officer for the 2d Brigade and, later, Commander of C Battery, 2d Battalion, 319th Field Artillery, both in the 82d Airborne Division.



It's Time for FA to Maneuver

by Lieutenant Colonel John M. House

Today's Field Artillery doctrine involves two basic forms of position occupation and battlefield movement. Cannon units occupy multiple howitzer firing positions, either by platoon or battery. Multiple-launch rocket system (MLRS) units occupy platoon operations areas (OPAREAs) within which self-propelled loader launchers (SPLLs) move from firing point to firing point. Both techniques work for their type weapon systems, especially when distances between cannon firing points and OPAREAs allow like units to provide fires for each other while moving.

The time associated with establishing a cannon firing point or an OPAREA means these systems work better when movement distances are short and the number of positions is minimized. In other words, slow-moving defensive and offensive scenarios fit our doctrine well; fast-paced operations involving large movement distances don't. Thus, successful armored operations involving rapid, long movements—especially in the offense—over all types of terrain challenge our ability to provide responsive fire support.

Our older howitzer systems don't support a change to our current way of operating. However, the new M109A6

Paladin and the MLRS launcher can revolutionize how we fight to provide more responsive fire support. They allow us to provide continuous fires and survive by *maneuvering* with infantry and armored forces on the battlefield. Our new-found responsiveness will allow us to dominate an enemy force, keep pace with the other combat arms and, most importantly, meet the challenges of the nonlinear battlefield of the future.

Old versus New. Today's cannon firing position requires an accurately located orienting point. We use an aiming circle to orient for direction and a position and azimuth determining system (PADS), conventional or hasty survey techniques and global positioning system (GPS) or map spot to determine grid location. We orient the aiming circle through one of these survey methods or by using the howitzer's internal magnetic compass. Obviously, the accuracy of the survey technique determines the accuracy of the firing unit's position location and direction orientation.

The result is a firing unit with each weapon pointed the same direction and each howitzer position in the fire direction computer. Firing data computation can provide individual howitzer directions of fire (deflection)

and firing elevations (quadrant) for the desired point-of-impact sheaf.

The MLRS OPAREA is significantly different. Each MLRS launcher locates itself using its stabilization reference package/position determining systems (SRP/PDS) and automatically lays itself on the desired direction of fire. The OPAREA consists of a series of firing points to allow individual launchers to rotate among them. One launcher occupies one firing point with rotation protecting the launchers from counterfire. Ammunition points and the platoon headquarters complete the OPAREA structure. Survey provides orienting data to update the launcher SRP/PDS. As you can see, the MLRS works very differently than our older howitzers.

The M109A6 Paladin conceptually provides the same capabilities as the MLRS. The M109A6 determines its own location and direction of fire. Its on-board fire direction system orients the cannon to engage the target. Each howitzer can occupy a single firing point. *FM 6-50-60 Tactics, Techniques, and Procedures for the M109A6 (Paladin) Howitzer Section, Platoon, Battery and Battalion* (Revised Final Draft) calls for the M109A6 platoon to occupy an OPAREA similar to that used by the MLRS platoon. Howitzers may operate in pairs for command and control and for mutual support rather than as individual weapon systems. There's no need for the traditional battery position using common laying data.

On the linear battlefield, employing these systems using current doctrine works well. The key to success is leap-frogging firing units to keep infantry and armor units under an umbrella of continuous fire support—easily done when the pace of battle is moderate.

However, as units move faster on the battlefield, the ability to maintain a given level of fire support becomes harder. This is because Field Artillery systems can't fire while moving and are inherently slower than M1 Abrams tanks and M2 or M3 Bradley fighting vehicles. Armor and infantry units can move faster and farther; therefore, greater numbers of Field Artillery assets must be available to ensure enough are in position and ready to fire while others move forward to extend the umbrella of fire support coverage.

A linear battlefield provides a relatively clear structure. Lines, such as boundaries, define friendly and enemy territories or areas of operations. Units expend great

effort protecting their flanks and rear areas so infantry and armor direct fire systems don't have to protect units that generally operate "behind" them. Field Artillery units fall in this category because they use indirect, not direct, fire systems. A nonlinear battlefield changes all of this.

The Nonlinear Battlefield. The nonlinear battlefield has no defined areas that are "safe" for friendly units. All units must be prepared to fight or defend themselves in any direction. The only area controlled by a unit is the ground it occupies or can fire into. Logistical support still requires base areas, but the force must protect them as individual entities. The territory between the protected base and maneuvering forces won't be under direct, constant friendly control. Any unit traversing this unprotected territory must be prepared to defend itself—whether that unit is combat, combat support or combat service support.

Current howitzer doctrine and force structure don't support operations on a nonlinear battlefield. Howitzer units can't protect themselves very well; therefore, they must remain close to an infantry or armor unit for protection. If the howitzers stop to fire on a nonlinear battlefield, they risk losing this protection.

MLRS units using OPAREAs have a similar problem. They are even less able to protect themselves than howitzer units—at least a howitzer can direct fire. Establishing an OPAREA takes time and generally requires the MLRS launcher to remain in one area. An infantry or armor unit may not remain in the immediate



The Paladin, along with the SPLL, can provide continuous fires and survive by *maneuvering* with infantry and armored forces on the battlefield

vicinity of an OPAREA, and the MLRS unit could lose the protection of the direct fire systems.

Armored warfare, where units move great distances at great speed, is taking on the characteristics of a nonlinear battlefield. Any such operation on the ground risks friendly flanks to attack. Their protection comes from speed or the units dedicated to their protection. Obviously, a deep maneuver may even result in the maneuvering force's completely severing its link to its original base. Such actions aren't new in the history of the US Army. Grierson's cavalry raid during the War Between the States is a prime example.

This discussion isn't meant to promote the nonlinear fight as the preferred method. But it is meant to promote Field Artillery's maneuvering. An infantry or armor force may have to maneuver with

its front, flanks and rear open to enemy attack. Field Artillery units must be prepared to participate in such a maneuver, or fire support won't be available when and where it's needed.

FA Maneuver Doctrine. Field Artillery's doctrine for wars of movement is inadequate. Our most recent war, Operation Desert Storm, is a clear example of the need to maneuver with infantry and armor units. There, countless howitzer and MLRS units used a wedge or box formation to move rapidly over significant distances. Many also conducted emergency occupations and fire missions to keep up with the demands for fire support.

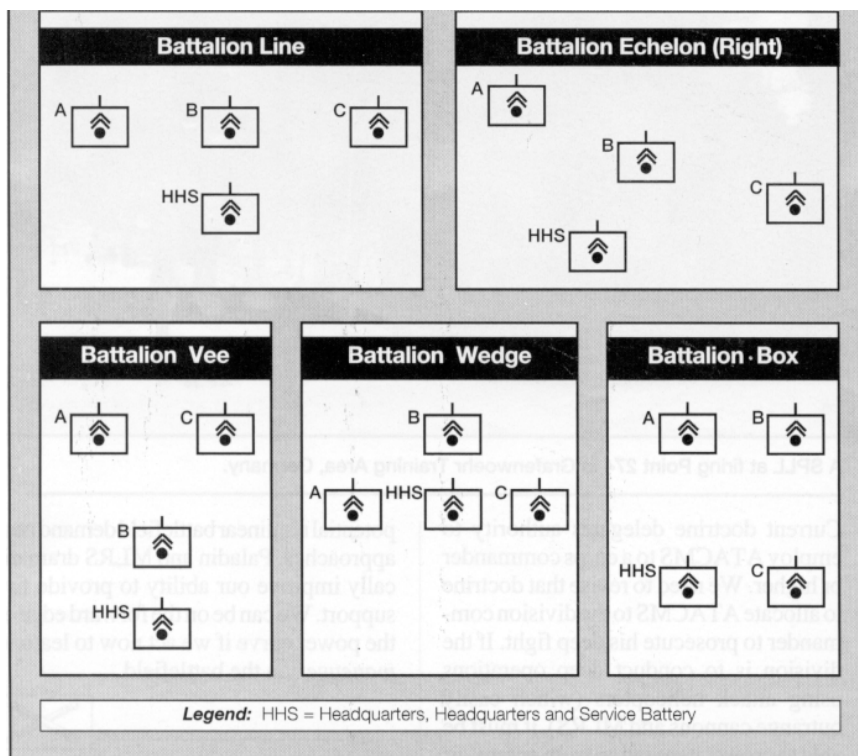
Artillery units didn't adopt these formations simply because they were traversing desert terrain. Units adopted those formations and firing techniques because they had to for fast-moving offensive operations—the standard howitzer position and occupation and MLRS OPAREA wouldn't have worked. Granted, the counterfire and aviation threat were low and the wide-open desert allowed formations that more restrictive terrain wouldn't. But the point is, in desert or other terrain, all offensive armored operations will be fast-moving and fire supporters must keep pace. Paladin and MLRS units must be prepared to move as complete elements if the pace of operations or other command and control concerns demand it.

And we *can* be prepared if we capitalize on the technological advances MLRS and Paladin provide us. The self-locating capability of both systems can revolutionize Field Artillery maneuver to meet the challenges of the nonlinear fast-moving battlefield.

Between survey update points, Paladins and SPLLs have the technological capabilities



A SPLL reloads from a heavy expanded-mobility ammunition trailer (HEMAT).



Battalion Maneuver Formation Options. The Field Artillery must be prepared to *maneuver* its assets. Adding a service battery and expanding the formations would make them equally applicable to cannon (Paladin) battalions.

of Abrams or Bradleys. By this I mean we have indirect fire systems that can act *individually* like direct fire systems.

Direct fire systems, such as the M1 Abrams and the M2/M3 Bradleys, engage an individual target by orienting their weapons at the target and firing. Each system individually engages a target. A unit leader can make a tactical decision for multiple M1/M2/M3s to engage a single target; however, each M1/M2/M3 determines its own orientation to fire at the target. The Paladin and MLRS work in much the same way.

The fire direction centers (FDCs) in Paladin and MLRS units perform tactical fire direction. They select the weapons to fire. Each M109A6 and SPLL chosen computes its own orienting data to fire at the target. (Notice the similarity to a direct fire system.) The Paladin and SPLL shoot farther and don't actually see the target—they remain indirect fire systems, just as the M1/M2/M3s remain direct fire systems. However, all act individually to fire a projectile.

Even though they remain indirect, area-fire weapon systems requiring massed fires for best effect, Paladins and SPLLs fire individually because they locate and orient themselves. Therefore,

there's no need for a centralized orienting station, such as an aiming circle. These capabilities make standard howitzer battery positions obsolete.

The doctrinal implication is that Paladin and MLRS units can and should be prepared to maneuver like infantry and armor units. We have options: we can either maneuver or establish firing positions, depending on the situation. If counterfire is a great threat and (or) we're in a relatively static or slow-moving situation, we can use an OPAREA; but if we must move rapidly over great distances, we also can maneuver, making any point on the ground we occupy a potential firing position. Our doctrine should address all such situations by publishing a *variety* of tactics, techniques and procedures (TTP).

Doctrine should discuss formations that integrate Field Artillery with supported infantry and armor units. The maneuver forces' vee, diamond, box and other formations should include Field Artillery movement. This is especially important for infantry and armor brigades because a direct support battalion will move with them often. Our TTP should discuss in detail the wedge and box formations used by many Field Artillery

units in Desert Storm. We should *expect* to maneuver on the battlefield—and not just from one firing point or OPAREA to the next.

The figure shows examples of proposed MLRS battalion formations. Adding a service battery and expanding the formations makes them applicable to a cannon (Paladin) battalion. The enemy and friendly situations will determine the appropriate formation to use. For example, firing battery locations depend on the expected direction of fire and range fans required to support a given operation. Headquarters, headquarters and service (HHS) battery positioning depends on where it can best command and control the battalion. Battery formations can replicate the battalion's by substituting firing platoons for firing batteries and the battery headquarters and the ammunition platoon for the HHS.

Armored Vehicles and Autonomy. Because platoons must be able to maneuver as discrete units, all platoon vehicles must be armored. The platoon leader should operate from the tracked M577 or its replacement.

Just like MLRS platoons, Paladin platoons don't need a platoon leader and platoon fire direction officer—one officer per platoon is sufficient. The FDC also can serve as the platoon headquarters, remembering that it no longer performs technical fire direction.

The platoon sergeant needs an armored vehicle so he can assist the platoon leader in command and control. The armor will help protect him if he conducts position or route reconnaissance in advance of the platoon.

Just as in an infantry or armor company, our Paladin and MLRS battery commanders need an armored vehicle for their protection in armored operations. It could be a M577, M113 armored personnel carrier, M2 derivative or one of their replacements. The commander's vehicle must *not* be the same vehicle that houses the battery FDC, which remains essential for tactical fire direction and as a backup to the platoon FDCs. The battery commander must have a separate vehicle to move freely about the battlefield to be at the critical point as dictated by the situation.

The same argument applies at the battalion level. The battalion tactical operations center (TOC), including the FDC, must be in an armored vehicle so it can maneuver forward. The battalion commander also needs an armored vehicle so he can

go to the critical point on the battlefield. An M577, M113 or their replacements will work. The wheeled M997 ambulance is another option; the vehicle is very mobile and has Kevlar protection. In fact, the M997 may be the better choice because of the age of the M577 fleet. M577s can't keep up with Bradley-type vehicles (like the SPLL can).

We must enhance our fire direction systems to allow digital communications and computer operations on the move; we should not have to stop FDCs. An FDC directly associated with a firing element can stop with no loss of command and control. However, a battalion or battery FDC may need to continue moving while a subordinate firing element stops to engage a target.

Our survey vehicles should be armored because they have to precede Paladins and SPLLs to ensure accurate position updates. The MLRS SRP/PDS also need improvement to match the capabilities of the Paladin. SPLLs can go only eight kilometers between position updates while Paladins can travel 27 kilometers before they must update their positions. Incorporating some form of GPS in the Paladins and SPLLs will decrease, but not eliminate, the need for survey control points. A survey capability remains important because continuous, accurate GPS satellite coverage isn't guaranteed.

We should be able to fire rockets over the SPLL cab, which we can already do with the Army tactical missile system (ATACMS). Firing rockets over the cab would decrease set-up time when moving an MLRS unit as a complete firing element oriented in the general direction of the enemy. We need as much of a 6400-mil capability as possible without damaging the weapon. Our future cannon systems should retain the 6400-mil capability for the same reason.

Another ATACMS-related issue concerns who has authority to fire them.



A SPLL at firing Point 274 in Grafenwoehr Training Area, Germany.

Current doctrine delegates authority to employ ATACMS to a corps commander or higher. We need to revise that doctrine to allocate ATACMS to the division commander to prosecute his deep fight. If the division is to conduct deep operations using attack helicopters (which easily outrange cannons and MLRS), it must be able to protect its aviation from enemy air defenses by employing ATACMS. The division commander owes his helicopter crews the quality of fire support ATACMS can provide. Also, being able to load one MLRS pod and one ATACMS pod in selected SPLLs would provide the commander greater flexibility in accomplishing his mission.

Conclusion. We are on the threshold of a unique opportunity. With Paladin and MLRS, we can revolutionize Field Artillery tactics for better fire support to the mechanized infantry and armor forces of today and tomorrow. This is not change for the sake of change. We must be prepared to maneuver to keep our supported forces under the fire support umbrella and to remain under the protection of those forces' weapons.

Our doctrine has served us well, but today's fast-paced armored operations and potential nonlinear battlefield demand

new approaches. Paladin and MLRS dramatically improve our ability to provide fire support. We can be on the forward edge of the power curve if we act now to learn to *maneuver* on the battlefield.



Lieutenant Colonel John M. House commands the 6th Battalion, 29th Field Artillery (Multiple-Launch Rocket System), 1st Armored Division, Germany. His previous assignment was as Executive Officer to the 24th Infantry Division (Mechanized) Artillery, Fort Stewart, Georgia. Also in the 24th Division, he served as the S3 of the Division Artillery and the S3 of 3d Battalion, 41st Field Artillery. Lieutenant Colonel House commanded F Battery, 29th Field Artillery (Target Acquisition) and Service Battery, 6th Battalion, 14th Field Artillery, both in the 1st Armored Division. He's a graduate of the School of Advanced Military Studies at the Command and General Staff College (CGSC), Fort Leavenworth, Kansas, and holds three master's degrees: Master of Science in Business, Auburn University, Alabama; Master of Art in History, University of Kansas; and Master of Military Art and Science, CGSC.

VIEW FROM THE BLOCKHOUSE

FROM THE SCHOOL

FDDM Fielding

Operation Desert Storm was an excellent combat test-bed for the multiple-launch rocket system (MLRS) in deep battle. We learned what improvements the fire support system needed to more quickly engage deep targets with the MLRS family of munitions (MFOM). The MLRS fire direction system (FDS) needed increased data base capabilities and management

techniques as well as communications and control functions. In short, we needed the fire direction data management (FDDM) system.

Fielding. FDDM is an interim system for the MLRS battalion and battery that will enhance the FDS until the advanced Field Artillery tactical data system (AFATDS) Version 3 software is fielded. A total of 55 FDDM systems will be fielded: 51 to

selected units (see Figure 1) and four to FDDM program management offices. There are no plans to field FDDM to US Army Reserve or Army National Guard units. Additionally, MLRS divisional batteries won't receive FDDM.

Unit	Number FDDMs	Fielding Date
XVIII Abn Corps Artillery Headquarters	2	Complete
18th FA Brigade Headquarters	1	Complete
3d Battalion, 27th FA	4	Complete
2d Infantry Division Artillery Headquarters	2	3Q, FY 94
6th Battalion, 37th FA	4	3Q, FY 94
V Corps Artillery Headquarters	2	3Q, FY 94
41st FA Brigade Headquarters	1	3Q, FY 94
4th Battalion, 27th FA	4	4Q, FY 94
III Corps Artillery Headquarters	2	1Q, FY 95
75th FA Brigade Headquarters	1	Complete
6th Battalion, 27th FA	4	Complete
5th Battalion, 18th FA	4	4Q, FY 95
212th FA Brigade Headquarters	1	1Q, FY 95
6th Battalion, 32d FA	4	4Q, FY 95
2d Battalion, 18th FA	4	3Q, FY 95
FA School (Training)	11	Complete

Figure 1: FDDM Distribution Plan. The total fielding is 55 FDDMs: 51 to selected active Army unit's worldwide (listed in this figure) and four to FDDM program management offices. Tactical fire direction system (TACFIRE) Version 10 software allows units that don't have FDDMs to communicate with units that do have them.

Components. The system consists of the lightweight computer unit (LCU), currently used as the FDS for MLRS; an AC/DC power converter and charger; the LCU printer; a communications and data processing unit (CDPU); a power conditioner unit; a communications security (COMSEC) device; and the tactical radios or wire necessary for external communications. Together, the components fill the space of a standard variable-format message entry device (VFMED) table in an M577 vehicle.

The operator enters data into the FDDM via the LCU. The LCU is a portable micro-computer capable of processing formatted and plain-text messages and then transmitting and receiving these messages digitally over standard Army tactical communications equipment. This same model computer is used throughout the Army in many applications. With MLRS, the computer becomes the FDS.

The CDPU is the main component of the system. It houses the communications processor unit and the data processor unit. The first processor handles all communications functions, distributing all internal and external message traffic. The second manages the data base. It maintains a copy of the fire support data base and performs fire mission processing and scheduling, capabilities analysis, special-munition selection and processing, tactical fire direction system (TACFIRE) message generation and technical fire control. Both processors have access to a 170-megabyte internal hard drive for storage.

Capabilities. The majority of the enhancements to the digital system are noticeable at the MLRS battery and battalion levels. At these levels, FDDM provides tactical fire direction.

The system covers not only current rocket and missile munitions, but also future MFOM. Selections are available for munitions, such as the M28 reduced-range practice rocket (RRPR), and projected munitions, such as the extended-range rocket (ERR) and the missile carrying the brilliant anti-tank submunition (BAT).

Selected brigade and corps fire support elements (FSEs) also are receiving FDDMs. In these FSEs, the brigade and corps fire support officers (FSOs) no longer will be at the mercy of TACFIRE for message formats and data base information. The FSOs will be able to plan and schedule almost at will. The added capabilities of the FDDM will allow the corps FSE to schedule the Army tactical missile system (ATACMS) up to 96 hours before an engagement.

The FDDM is located next to the LCU/FDS and linked to it via an ethernet-type local area network (LAN). The system's communications facilities accommodate either wire or tactical radio and provide communications or data links with other systems (see Figure 2).

- AFATDS
- TACFIRE/Initial Fire Support Automated System (IFSAS)
- Joint Surveillance and Target Attack Radar System (Joint STARS) Ground Station Module (GSM).
- Artillery-Locating Radar (Firefinder)
- Fire Support Team Digital Message Device (FIST DMD)
- M270 Launcher Fire Control System (FCS)
- Meteorological Data System (MDS)
- Variable-Format Message Device (VFMED)

Figure 2: The FDDM provides communications or data links with the systems in this figure.

In addition to the enhanced weapons package, the FDDM also supports an expanded data base that allows autonomous operations (independent of TACFIRE), target segmentation and effects calculation. Figure 3 shows some features of the FDDM's expanded data base as compared to the FDS data base.

Data Base File	FDS	FDDM
Subscribers	72	100
Fire Plans	6	20
Geometries	55	300
Firing Points	81	162
Hide Location	81	162
Targets	125	1,000
Message Formats	28	39

Figure 3: Comparison of MLRS FDS to FDDM Data Base Capabilities.

Training. New equipment training teams (NETTs), unit training and institutional training teach personnel to use the FDDM.

Units receiving the FDDM can expect NETTs to train-the-trainers as the equipment arrives.

Instructors at the Field Artillery School, Fort Sill, Oklahoma, have completed a three-week instructor training program on the FDDM. Institutional training at the Field Artillery School will start the third quarter of FY 94. FDDM training will be included in the MLRS Fire Direction Specialist 13P advanced individual training (AIT), basic and advanced NCO courses (BNCO and ANCO) and the MLRS Cadre and TACFIRE FSE (Fire Support Specialist 13F) courses. The FDDM portion of the courses will be approximately two weeks long and cover maintenance,

equipment controls and indicators and system operating procedures.

Units that have or will receive the FDDM are encouraged to report any training problems by writing the Fire Direction Branch of the MLRS Division in the Gunnery Department: US Army Field Artillery School, ATTN: ATSF-GR, Fort Sill, Oklahoma 73503-5600 or call: DSN 639-6688/6121 or commercial (405) 442-6688/6121.

SFC Roosevelt Calloway, FA
MLRS Division, Gunnery Department
Field Artillery School, Fort Sill, OK



Fire Support Combined Arms Tactical Trainer (FSCATT)

The Field Artillery has long recognized the importance of training the gunnery team—firing section, fire direction center (FDC) and forward observers (FOs)—to deliver accurate predicted fires. The preferred method is to conduct live-fire training in the field, but this training is both difficult and expensive. The number of live-fire exercises in the future will decrease significantly because of constrained budgets.

FSCATT, which was formerly known as the closed-loop artillery simulation system, or CLASS, will train the gunnery team realistically and inexpensively. It will train a cannon battery or platoon to Army training and evaluation program (ARTEP) mission training plan (MTP) standards (AMTP standards) by simulating live fire in a garrison environment.

FSCATT will be a "system of systems" to train each element of the gunnery team in a stand-alone mode by element or integrated into a closed-loop mode. It's the Field Artillery's component of the family of combined arms tactical trainers (CATT) that will train artillery units in collective tasks in a combined arms environment.

Two-Phase Trainer. FSCATT will be fielded in two phases. Phase I will consist of target acquisition, fire direction and weapons delivery subsystems; a collective training control subsystem; and a linkage to connect it to the CATT family. The focus of Phase I is to field individual and crew training devices.

In the closed-loop mode, the FO uses prescribed gunnery procedures to transmit target data to the FDC where the gun data is computed. The data is passed to the guns and "fired"; then "shot over" is transmitted to the FO trainer. The observer trainer displays the effects of the rounds "as fired" by each gun. Any gunnery team errors are displayed in the collective training control subsystem.

The target acquisition subsystem will train FOs in the classroom using organic communications devices (i.e., digital message device). It will simulate artillery fires in many interchangeable terrain scenes projected on a screen. The FSCATT "battlefield" will have stationary and moving targets and simulate all types of munitions, to include the family of smart munitions. FOs will be able to practice close air support (CAS) and naval gunfire procedures.

Using organic computation equipment, FDC personnel

receive the request for artillery fire from the FO, compute the information for the firing battery to defeat the target and, in turn, transmit this information to the howitzer crew. The howitzer crew receives fire mission data from the FDC, applies the data to the weapons delivery subsystem and "fires" the mission.

The weapons delivery subsystem will include a fully ruggedized crew trainer that simulates the inside and functions of the M109A5 howitzer (i.e., recoil, elevation and traverse). During operations, the trainer will measure, record and display the firing data.

Strap-on trainers also will be included as part of the weapons subsystems. Strap-on trainers for the M102, M119, M198 and the M109 series of howitzers (except for the M109A6) will consist of sensor-equipped fire control instruments that attach to the howitzers to measure, record and display the firing data as set by the crew. The M109A6 howitzer will have a strap-on package to interface directly with its automatic fire control system (AFCS) that contains all the gun setting commands.

The collective training control subsystem's primary functions will be to initiate collective training, monitor performance and collect data for the gunnery team after-action reviews (AARs). The control subsystem will allow the gunnery team's target acquisition assets (FOs) to participate in collective training.

Phase II will include the capabilities of Phase I and focus on individual through battalion-level training. To allow training on a fully interactive simulated battlefield, Phase II will network vehicle simulators and command, control, communications and support work stations. These represent the vehicles, FDCs, support functions and weapons systems of a Field Artillery cannon platoon and the combat support and combat service support elements that support the platoon. Scenarios and tasks to be trained are being developed.

Fielding. FSCATT is one of six Army programs nominated for Congressional approval as part of the Department of Defense (DoD) Acquisition Pilot Program. The pilot program is designed to improve DoD acquisition by waiving certain laws and regulations that encumber procurement. The program will encourage wider industry participation, reduce government oversight, expedite

delivery time and ensure a stable funding profile. Notification of Congressional approval is pending.

Fielding of Phase I is scheduled to begin in FY 97. All division artileries, Field Artillery brigades and armored cavalry regiments in the Active Component and all Field Artillery battalions and armored cavalry regiments in the Reserve Component will receive Phase I howitzer individual and crew training devices.

Phases I and II of FSCATT will provide a cost-effective, efficient and easy-to-use system to train the entire gunnery team to standard. FSCATT will provide sophisticated, timely feedback on individual, crew and system performance. It will

increase the training opportunities available to the gunnery team and markedly improve the effectiveness of integrated fire support training.

If units have questions about FSCATT, call the Training Devices Branch of the Depth and Simultaneous Attack (D&SA) Battle Laboratory at DSN 639-5077/3026 or commercial (405) 442-5077/3026. Units can write the branch at Commandant, US Army Field Artillery School, ATTN: ATSF-CBL, Fort Sill, Oklahoma 73503-5600.

Melvin J. Holifield
C, Training Devices Branch, D&SA Battle Lab
Field Artillery School, Fort Sill, OK



Call for Papers



- History of Tactical Nuclear Fire Support
- Doctrine on Employing Missiles and Rockets
- History Topics Related to Joint and Operational Fires
- Battle Analysis of Honey Springs, Oklahoma (Civil War)
- Fire Support in the Battle of Pea Ridge, Arkansas (Civil War)
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- Fire Support in the Indian Wars
- Corps Artillery in the Post-Korean War Era
- History of Target Acquisition
- History of Precision Munitions
- History of the Development of the Scheme of Fires
- Fire Support in Operation Desert Storm
- Fire Support in Operation Just Cause
- Historical Topics Related to Fire Support in Operations Other than War

These topics support history instruction and research at the Field Artillery School, Fort Sill, Oklahoma. Anyone who would like to write on these topics and needs assistance may call Lieutenant Colonel James J. Carafano, History Instructor, at DSN 639-4165/5819 or commercial (405)

442-4165/5819. If you already have prepared monographs or research papers on these topics, please send a copy to the Commandant, U.S. Army Field Artillery School, Fire Support and Combined Arms Department, ATTN: ATSF-TF (LTC Carafano), Fort Sill, Oklahoma 73703-5600.

New FM Defines Domestic Support Operations

Fielded in August 1993, *FM 100-19 Domestic Support Operations* lays down formal guidelines for Army assistance projects and tells commanders how to use their equipment and personnel to help civilian communities. Domestic support encompasses many of the disaster relief and law enforcement support activities traditionally performed by the Army; but the manual broadens the scope of Army domestic operations to include improving the nation's physical and social infrastructure.

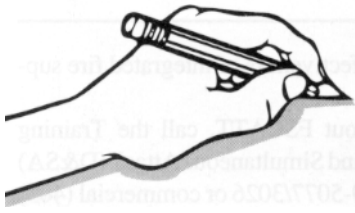
Domestic support is an umbrella term that includes disaster relief, law enforcement support, community assistance and environmental assistance. In community assistance, the Army may use its skills, capabilities and resources to enhance American communities at the national as well as at local levels. For example, the Science and Technology Academies Reinforcing Basic Aviation and Space Exploration, or STARBASE, Program at the National Science Center at Fort

Gordon, Georgia, provides assistance nationally. The \$44 million STARBASE brings together educators, military personnel and corporate sponsors to enhance the science, math and English skills of students in the elementary through the secondary education levels.

Environmental assistance includes controlling oil and hazardous material spills, regulating wetlands, supporting the Environmental Protection Agency, supporting recycling techniques and managing natural resources.

In the six months it took the Training and Doctrine Command to develop the manual, more than 300 federal, state and city government officials contributed their experiences and expertise to the project.

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How to Write a DS Mission Statement

by Lieutenant Colonel Timothy R. Puckett



The mission statement in Paragraph 2 of the Field Artillery support plan (FASP) is intended for those who must manage assets and lead soldiers, primarily battery commanders of direct support (DS) and any reinforcing (R) battalions. The statement must tell them precisely what to do, outlining tasks essential to mission success.

FM 6-20-1 Tactics, Techniques and Procedures for the Field Artillery Cannon Battalion gives an excellent definition of the FASP mission statement. The FM says, "[it] is a clear, concise statement of the task the FA unit is to accomplish. As a minimum, it should answer the questions *who, what, when, where* and *why*. It includes essential tasks determined by the commander as a result of his mission analysis" (Page E-2).

However, the same FM gives an exceptionally poor example of an actual mission statement just five pages later. It says, "1-51 FA provides conventional artillery fires in direct support of 2d Brigade, 52d ID(M) defense in sector NLT 061800 Nov 89" (Page E-7). Unfortunately, it's this example that most DS units use as a model for a mission statement.

Though the sample statement is definitely concise, it doesn't clearly state what tasks the unit performs to provide "conventional artillery fires." The bottom line is, can the unit successfully accomplish the intended mission? Given a mission statement such as the example in FM 6-20-1, the answer is, "With a lot of luck, maybe." In the Field Artillery business, that answer isn't good enough.

This article explains a three-step process for the DS battalion staff to develop a mission statement that, by definition, is clear and concise. The process is adapted from *FM 101-5 Staff Organization and Operations* and *Command and General Staff College Text 100-9 The Tactical Decision*

Making Process.

Step 1:

Analyze the higher unit's mission and commander's concept of fires and determine the specified, implied and essential tasks.

Because the FA battalion commander, who's also the fire support coordinator (FSCOORD), often is away from the DS tactical operations center (TOC) helping his commander develop courses of action, the battalion S3 frequently develops the FA mission statement. He starts by analyzing the mission given to the supported maneuver unit (typically a brigade) and the FSCOORD's understanding of the commander's concept of fires. To illustrate the mission statement development process, we'll use the brigade mission statement and the brigade commander's intent in the scenario from FM 6-20-1.

(1) [Brigade Mission Statement] 2d Brigade, 52d ID(M) moves to and occupies defensive positions from LJ234282 to LJ145185 NLT 061200 Nov 89 and defends in sector with two task forces [TFs] abreast to destroy attacking enemy forces forward of PL [Phase Line] Vegas. TF 1-17 Armor and TF 1-81 Mechanized will defend in the north and south, respectively. TF 2-81 Mechanized will be the brigade reserve initially, then will counterattack along Axis Lee if enemy forces reach PL Vegas.

(2) Brigade commander's intent: The brigade will conduct a mobile defense in sector. Fires and obstacles will be used to canalize the enemy into the southern part of the brigade sector. TF 1-81 will conduct a fighting withdrawal to prepared positions east of PL Vegas, while TF 1-17 in the north holds its position in Battle Position (BP) 3 and prepares to meet the second-echelon regiment. TF 2-81, the brigade reserve, counterattacks from positions in the north of the brigade sector into the flank of the first-echelon regiment. Artillery fires will be used to slow and confuse the enemy and attack his command and control as he comes into range at PL Lance by concentrating Copperhead and DPICM [dual-purpose improved conventional munition] fires in TAIs [target areas of interest] 1 and 2. Copperhead fires will be controlled by COLTs [combat observation lasing teams] and OH58Ds. Three OH58Ds will be DS to the brigade. One OH58D will be operational and in position to observe the TAIs continuously. I am concerned about the ability of the enemy's fire support system to limit our ability to maneuver. I want a proactive counterfire effort, using the

Firefinder radar and any other available assets to locate the enemy's indirect fire systems. Plan a counterprep based on the best available intelligence to be executed on my order. Once the enemy first echelon exits TAIs 1 and 2, priority of the fire support effort shifts to EA [engagement area] Fish, where I want to stop the enemy and destroy his first-echelon battalions with direct and indirect fire. As TF 181 breaks contact and begins to move to its alternate positions, a smoke program will be fired to assist in disengagement and screen their movement. When I order the counterattack, priority of fire will shift to TF 2-81. Artillery fires will be employed ahead of the counterattack to fix the enemy and hinder his ability to shift his force to meet the attack into his flank (scenario taken from Page E-6).

After analyzing the brigade's mission and the brigade commander's concept of fires, the S3 extracts the specified tasks, determines the implied tasks and finally defines the essential tasks. Based on the FM 6-20-1 scenario, the list would look something like the one in Figure 1.

<p>Specified Tasks</p> <ol style="list-style-type: none"> 1. Range to PL Lance. 2. Concentrate Copperhead and DPICM into TAIs 1 and 2. 3. Control Copperhead fires with COLTs and OH58Ds. 4. Execute a proactive counterfire effort. 5. Plan a counterprep to be executed on order. 6. Destroy first-echelon battalions in EA Fish. 7. Deliver smoke to support TF 1-81 disengagement. 8. Deliver fires to support TF 2-81 counterattack. <p>Implied Tasks</p> <ol style="list-style-type: none"> 1. Position Copperhead firing units to support attack of TAIs 1 and 2. 2. Coordinate Q-37 and counterfires with Div Arty [division artillery]. 3. Preposition ammunition. 4. Conduct target area survey. 5. Plan delivery of FASCAM [family of scatterable mines] into EA Fish. <p>Essential Tasks</p> <ol style="list-style-type: none"> 1. Concentrate Copperhead and DPICM in TAIs 1 and 2. 2. Mass to destroy first-echelon battalions in EA Fish. 3. Deliver smoke to screen TF 1-81 disengagement. 4. Execute counterfires. 5. Deliver fires in support of TF 2-81 counterattack.
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Figure 1. By analyzing the brigade's mission statement and the brigade commander's concept of fires, the FA battalion S3 can sequentially determine the specified, implied and then essential tasks his battalion must perform. The list of tasks in this figure is the result of Step 1 in the DS mission statement development process.

Step 2:

Determine who, what, when, where and why (the 5Ws) from the list of tasks.

Using the 5Ws format given in FM 6-20-1's definition of the mission statement, the S3 takes information from the task list and plugs in the answers. Again, based on the FM 6-20-1 scenario and the tasks extracted from it in Figure 1, the answers to the 5Ws might look like those in Figure 2.

Who:	1-51 FA (DS) and 2-636 FA (R)
What:	Support 2d Brigade, 52d Infantry Division (Mechanized) defense in sector
When:	NLT 061200 Nov 93
Where:	From PL Lance to PL Vegas
Why:	To deliver Copperhead to attack C ² [command and control] vehicles in TAIs 1 and 2, mass fires to destroy elements of the first-echelon battalions in EA Fish, fire smoke to screen TF 1-81 disengagement, execute proactive counterfires and deliver fires in support of TF 2-81 counterattack.

Figure 2: Using the 5Ws format, the S3 plugs in the answers from his list of tasks. The 5Ws answers in this figure are the result of Step 2.

Step 3:

Write the mission statement by stringing the answers to the 5Ws into a coherent statement.

The mission statement used as an illustration in this article would read like this: "1-51 FA (DS) and 2-636 FA (R) support 2d Brigade, 52d ID (M) defense in sector NLT 061200 Nov 93 from PL Lance to PL Vegas by delivering Copperhead to attack C² vehicles in TAIs 1 and 2, massing fires to destroy elements of the first-echelon battalions in EA Fish, firing smoke to screen TF 1-81 disengagement, executing proactive counterfires and delivering fires in support of TF 2-81 counterattack."

The mission statement developed using this three-step process defines the mission the Field Artillery unit has to accomplish (support the defense in sector) and outlines the essential tasks it has to do to accomplish that mission successfully. This is the bottom-line-up-front approach that leaves little doubt about *what* the unit has to do. At the same time, the statement doesn't tell the unit how to do it, avoiding the level of detail that's counterproductive. This three-step process allows the staff to develop a clear, concise DS mission statement, going a long way toward ensuring the unit's success.



Lieutenant Colonel Timothy R. Puckett, until recently, was the Brigade Fire Support Trainer at the National Training Center (NTC), Fort Irwin, California. Currently, he's the Operations Officer for the Operations Group at the NTC. During his 18 months of NTC rotations, he devised the three step process for writing a direct support mission statement as outlined in this article; the process is being incorporated into Field Artillery Officer Advanced Course and PreCommand Course instruction at the Field Artillery School, Fort Sill, Oklahoma. His previous assignments include serving as Executive Officer and S3 of the 1st Battalion, 82 Field Artillery, 1st Cavalry Division, Fort Hood, Texas, and Brigade Fire Support Officer in the 1st Cavalry Division. Lieutenant Colonel Puckett commanded two batteries in the 4th Infantry Division (Mechanized), Fort Carson, Colorado. He holds a Master of Military Art and Science from the Command and General Staff College, Fort Leavenworth, Kansas.