Field Artillery

A Professional Bulletin for Redlegs

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INTERVIEW

FEATURE ARTICLES: Fighting with Fires

ARTICLES

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ON THE MOVE

MAJOR GENERAL FRED F. MARTY

"Fighting with Fires" Initiative

"Our goal must be to enable [combined arms] commanders to fight fire support systems with the same skill and vigor with which they employ direct fire systems."

Last October I attended the US Army Europe (USAREUR) Major Leader Training Conference (MLTC) in Grafenwoehr. During the conference, General Crosbie E. Saint, Commander-in-Chief, USAREUR, described the difficulty combined arms commanders are experiencing in synchronizing indirect fires with maneuver at the Combat Maneuver Training Center (CMTC).

Analysis of performance trend lines at other combat training centers (CTCs), articles over time in this and other professional military journals and discussions with field commanders reveal the challenge General Saint describes is not restricted to European warfighters. Clearly, solutions to this challenge offer a tremendous opportunity to enhance the effectiveness of the combined arms team. In response, the United States Army Field Artillery School has launched the "Fighting with Fires" initiative.

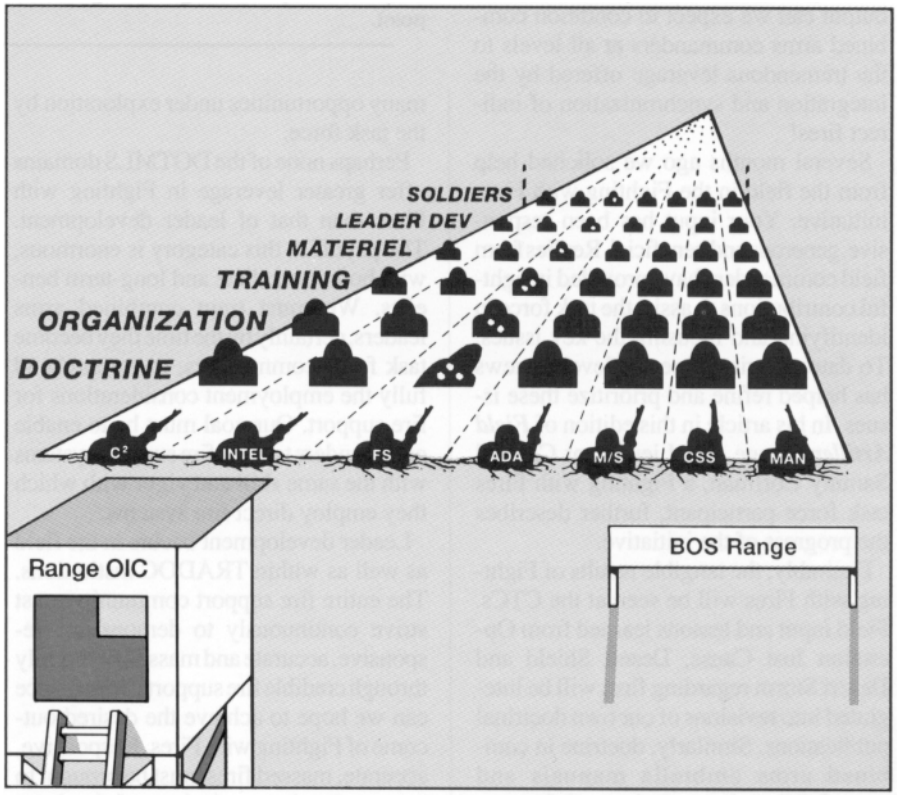
Leveraging the combined arms commander's ability to fight using available fire support assets describes the fundamental purpose of Fighting with Fires. Deliverables include a determination of the emphasis, fixes, or new work required in the traditional Training and Doctrine Command (TRADOC) domains of doctrine, organization, training, materiel, leader development and soldiers (DOTMLS).

Members of the Fighting with Fires task force have characterized the dilemma as analogous to that of a rifle range, with each shooter watching his lane. Essentially, each battlefield operating system (BOS) is independently engaging targets within its own lane. And with relative success, each BOS is hitting its own DOTMLS targets. (See the figure.)

The fire support community is actively engaging all of the DOTMLS targets within our lane. While targets of the pop-up variety continue to appear within each of the DOTMLS categories, multiple hits from the institution and by field commanders repeatedly cause fire support lane targets to fall.

The crux of the dilemma lies with the "long-range, moving-type" targets. Without integration and synchronization of all the shooters, a combined arms commander in the range tower cannot bring to bear all of the available combat power against the high-payoff targets moving across the BOS lanes and beyond the range poles. Part of the challenge lies in preparing the combined arms commander for his expanded duties within the range tower.

Typically, brigade and task force commanders comprise the first level of combined arms leaders with the capability to integrate and synchronize the full range of battlefield operating systems. But the transition from a BOS range "maneuver" lane to the control tower on a



The fire support community is actively engaging all the DOTMLS targets within our lane. But we also need to engage the "long-range-moving-type" targets, as depicted in the figure on page 2.

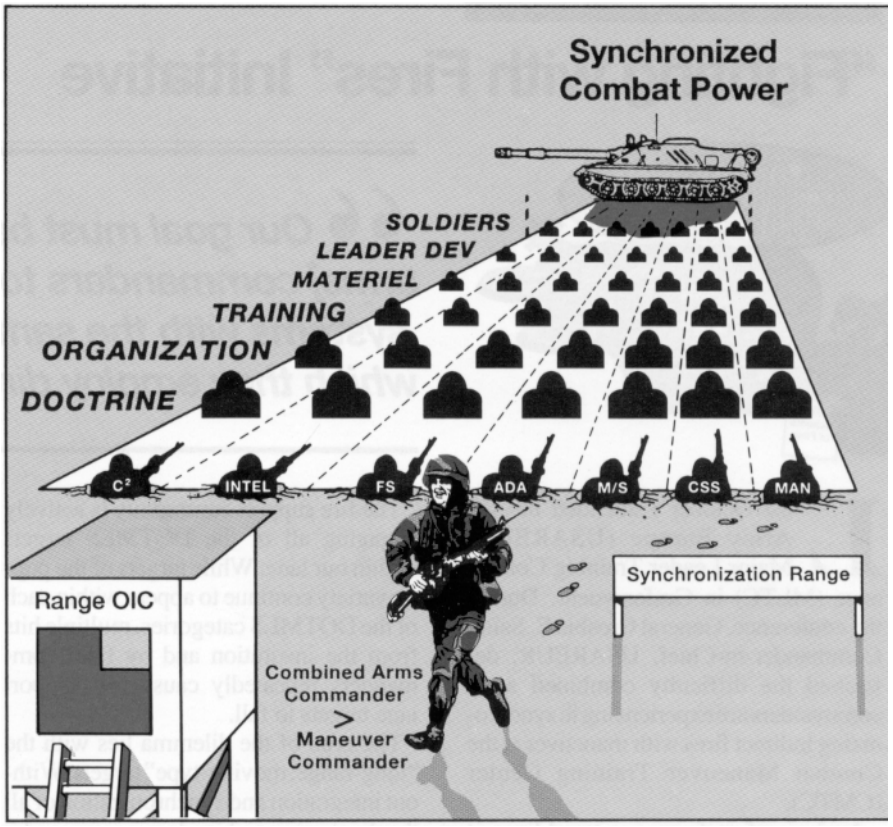
synchronization range is not an easy one. Within the realm of fire support, the fire support coordinator (FSCOORD) can provide qualified technical assistance. But the full metamorphosis from maneuver commander to combined arms commander cannot occur without achieving the ability to integrate and synchronize BOSs outside the more narrow maneuver lane.

In our analogy, the maneuver commander must broaden his perspective by mounting the range tower. (See the second figure.) From this vantage point, his vision, conditioned by institutional knowledge, self-study, and field experience, widens his lane. The combined arms control tower provides a perspective offering battlefield success through integration and synchronization of the BOSs. With the support of his FSCOORD, an opportunity exists for the combined arms commander to leverage fires.

Our challenge as fire supporters is to ensure all of the DOTMLS continue to be effectively engaged. We must be able to demonstrate and replicate responsive, accurate, and massed fires that offer opportunities for success in combined arms training environments. Only through this output can we expect to condition combined arms commanders at all levels to the tremendous leverage offered by the integration and synchronization of indirect fires!

Several months ago we solicited help from the field in the Fighting with Fires initiative. Your input has been responsive, generous and beneficial. Replies from field commanders have provided insightful contributions to assist the task force in identifying and focusing the key issues. To date, a series of senior level reviews has helped refine and prioritize these issues. In his article in this edition of ***Field Artillery*** (page 12), Lieutenant Colonel Sammy Coffman, a Fighting with Fires task force participant, further describes the progress of the initiative.

Desirably, the tangible results of Fighting with Fires will be seen at the CTCs. Field input and lessons learned from Operation Just Cause, Desert Shield and Desert Storm regarding fires will be integrated into revisions of our own doctrinal publications. Similarly, doctrine in combined arms umbrella manuals and cross-BOS tactics, techniques and procedures (TTPs) must be updated and extended. As you read Lieutenant Colonel Coffman's article, you will see the many opportunities under exploration by the task force.



The maneuver commander must broaden his perspective to become a combined arms commander by mounting the range tower and synchronizing the battle from this vantage point.

Perhaps none of the DOTMLS domains offer greater leverage in Fighting with Fires than that of leader development. The payoff in this category is enormous, with both immediate and long-term benefits. We must train combined arms leaders, certainly by the time they become task force commanders, to comprehend fully the employment considerations for fire support. Our goal must be to enable commanders to fight fire support systems with the same skill and vigor with which they employ direct fire systems.

Leader development occurs in the field as well as within TRADOC institutions. The entire fire support community must strive continuously to demonstrate responsive, accurate and massed fires. Only through credible fire support performance can we hope to achieve the desired outcome of Fighting with Fires. Responsive, accurate, massed fires must be brought to bear at the time and place of the force commander's choosing against high-payoff targets moving amid the BOS lanes and beyond the range poles.

You will hear and read more about the Fighting with Fires initiative. We will report on its progress in subsequent editions of ***Field Artillery*** and in other professional military journals. Expect to see its implementation in doctrinal publications and in institutional and field training environments. Rest assured, all alternatives will be exploited to inculcate into leaders at all levels those tactics, techniques and procedures that will afford the force maximum leverage from Fighting with Fires.

I sincerely appreciate the support received from senior leaders and field commanders to help us frame the critical issues and to offer practical recommendations. Fighting with Fires is the essence of future fire support. I remain optimistic that combined arms doctrinal publications, training methodologies and leader development programs will be altered significantly to reflect the contributions of the Fighting with Fires initiative.

Field Artillery—*On Time, On Target!*

INCOMING

LETTERS TO THE EDITOR

Scouts and Fire Support: A Neglected Topic

A glaring deficiency in the current family of fire support manuals available to the mechanized task force (TF) fire support officer (FSO) is the lack of tactics, techniques and procedures describing "how" to support the TF scout platoon and integrate it into the scheme of fires. For instance, *FM 6-20-40 Fire Support for Brigade Operations (Heavy)* doesn't mention scouts in the offense fire planning example, yet every TF has a scout platoon that normally plays a decisive role in offensive missions.

TF FSOs must turn to other combined arms manuals to seek solutions. One of the better ones is *FM 17-98 Scout Platoon*. But the topic of integrating scouts into the fire plan is too lengthy to be addressed in this format.

The purpose of this letter is to propose solutions to a more fundamental problem TF FSOs face: What's the best way to talk to or coordinate with the scout platoon? What follows are several ideas for TFs to tie scouts into the fire support system.

Scouts can use the mortar or the artillery fire direction net to call for fires. This procedure is addressed in FM 17-98 and most TF standing operating procedures. It requires practice and training at home station (with the scouts) to work. Units that use this method often don't consider communications (a problem at Hohenfels and other hilly areas) before crossing the line of departure (LD) and fail to identify a retransmission requirement.

Other problems include a lack of familiarity with the scout call sign in the mortar and Field Artillery fire direction centers, so the scout isn't heard or is ignored. This technique also requires the scout to drop off a primary frequency to execute the mission.

Scouts can take an artillery FO [forward observer] with them on the mission. This technique usually breaks down for two reasons. One is, again, communications. What radio does the FO use? A PRC-77 with the antenna sticking out of the back of the Bradley fighting vehicle is a less than perfect solution. The second breakdown is that scouts often don't want or need the extra burden of an additional person along. Again, if this technique is used, training at home station is required to make it work.

Scouts are trained observers. Therefore, the best solution might be to have a conduit for scouts to call for fires. Putting a dismounted FO with them with the intent that he will relay (not control and adjust) fire missions for the scouts is viable if the communications link is in place.

Scouts can cross the LD with a combat observation lasing team (COLT) or reserve fire support team (FIST). This technique is addressed in FM 17-98. It builds on the idea that what's needed is a reliable communications platform to coordinate with the scouts and relay fire missions and information.

Using a COLT or FIST also gives the FSO the flexibility to assign other fire support tasks to this section. If the scouts use HMMWVs [high-mobility multipurpose wheeled vehicles], an M981 vehicle for the COLT or FIST may not be the best choice. Still, this technique is workable.

Scouts can relay fire missions over the TF command frequency themselves, taking no augmentation. A common technique, the scout platoon leader requests fires over the TF command net to the tactical operations center (TOC) with the request relayed to the TF fire support element (FSE) for processing.

The major problem is that the TF command net can be extremely busy and an unreliable means to conduct observed, adjusted fire missions on. The technique works in the TF's periods of light activity. During the main battle area fight, this technique is a "no-go."

The TF S2 can relay fire missions from the scouts over the TF operations and intelligence (O&I) or scout internal net. This technique is better than using the TF command net as the relay net. It doesn't require the scout to switch frequencies and uses a less crowded net to conduct observed, adjusted fire. Also the link through the TF S2 facilitates the targeting process. Finally, the TF should handle any retransmission requirements.

The TF FSO can use organic radio assets to talk to the scouts on the scout internal net. This is a desperate measure to be used only when the other methods fail. If success or failure of the fire plan (and possibly the maneuver plan) rests on communications with the scouts, this technique could be necessary.

The final point that applies to any attachment of FISTs, COLTs or FOs to scouts is to link them up as early as possible. The scout platoon leader is busy and doesn't need lost, missing or late attachments given to him by the TF FSO—an albatross around the scout's neck. Fire supporters attached to scouts should be tactically proficient self-starters who can take care of themselves if need be. Attachments should have their fuel, food, ammunition, graphics and a mission brief before linking up with the scouts. COLTs kept at the brigade TOC until after the TF scouts cross the LD should not be expected to be successful on the battlefield. This late attachment indicates a time-management problem at the brigade level.

The ideal solution is probably a blend of one or more of the techniques described. A TF FSO is limited only by his imagination in developing his solution. Whatever method is selected, the FSO must remember that practice in a combined arms environment is the key to success.

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Response to "Field HMMWV-Based COLTs Now!"

In response to Lieutenant Colonel Henry T. Stratman's article "Field HMMWV-Based COLTs Now!" [April 1992] we must think very carefully before we add combat observation lasing teams (COLTs) to the mechanized infantry brigade at the expense of personnel in fire support teams (FISTs). From a Field Artilleryman's point of view, reorganization of the mechanized infantry FIST makes sense. However, we must examine the logic that was the basis for the FIST organization as now structured.

The original bill payer for the FIST was the maneuver forces who gave up manpower

spaces to support the current structure. The forward observers (FOs) in the infantry FIST were there primarily to support calls for fire for mortars as well as artillery.

The reduced FIST structure for armored forces and the lack of FIST structure for scouts was deliberate. The reasoning was that a task force (TF) commander could task organize to support the disparate scout missions using his robust infantry company FIST assets.

By reorganizing the FO parties as in Lieutenant Colonel Stratman's proposal, a commander with a balanced or heavy mechanized TF would have fewer FO parties under his control. An armor-heavy TF commander with only one infantry FIST would still only have three teams, and the number wouldn't increase with the addition of another infantry company in a five-company TF. When the TF doesn't have priority of fires for artillery, then the TF's ability to cover its front with observers to call for mortars is significantly reduced.

The lack of FIST structure for scouts is a real problem, both in terms of personnel and equipment. Currently, the TF commander must reallocate FISTs from other companies if his intent is to engage the enemy early with indirect fires.

Maneuver scouts can be trained to call for fires or can be augmented as the commander desires. A scout can trigger fires as well as an FO or COLT.

Therefore the question is, has the TF commander rehearsed his operation to include the who, when, where, with what and how for indirect fires? If the rehearsal identifies that the scout force is not adequate to meet the commander's intent, then it should be augmented with enough personnel and equipment to trigger fires, observe obstacles, etc. Whether that requires a COLT is METT-T [mission, enemy, terrain, troops and time available] dependent.

Providing HMMWV-equipped COLTs solves the scout dilemma, to a certain extent. But how does the main battle battalion TF commander come to grips with less FO support once the scouts have handed over the fight? Who will call for fires and observe and adjust his mortars?

Maneuver needs must drive the FIST structure. The resulting structure must support the spectrum of missions a TF could be assigned and be flexible enough to ensure adequate support for the close fight mission.

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Fire Support and Combined Arms
Operations Department
Field Artillery School, Fort Sill, OK

Leadership — *Not Rhetoric but Reality*

A subordinate leader's ability to act correctly, without specific guidance from his superior, often determines success or failure in dynamic endeavors. Commanders who take the time to teach their subordinates a few basic principles provide invaluable guidance in the form of a "permanent commander's intent" for use in any circumstance.

Captain "R" commanded Battery A of a direct support, M109 battalion stationed in Germany. The battalion's reputation was very strong within the division, due to many successes in both field and garrison endeavors.

Captain R's stated goal was "...to make A Battery the best possible firing battery." To accomplish this task, he communicated several principles to his subordinates during his command.

- *Judge performance against standards, not others' performance.*
- *Get men to follow you because you're the unit's best soldier.*
- *Doing the little things well make good units great ones.*
- *Don't be afraid to tell your boss everything.*
- *Don't be parochial; always look at the larger picture.*
- *Leaders must get cooler as the situation gets hotter.*

This article discusses Captain R's use of these principles and examples of the benefits they provided the unit. Commanders, at all levels, can use these principles to assess their own units.

The Principles at Work. The new battery executive officer proudly brought Captain R section evaluation scores showing better results than both B and C Batteries. After reviewing the results, the battery commander pointed out several shortcomings in the battery's performance, where sections did not meet battery goals. He explained to his executive officer that true success is not relative to the success of others. Instead, *judge performance against your standards, not against the performance of others.*

The executive officer learned that sections and batteries competing against each other ensures that one is a winner and that many are losers. His focus shifted to clear established standards that, when met, meant success and, when not met, required improvement. Pitting individuals, sections and units against standards gives each the opportunity to succeed, breeding pride and accomplishment, the foundation of unit morale.

Men follow leaders for many reasons: respect, fear, devotion and position are among the most common. Captain R felt that only one was appropriate, and he applied this to all members of the chain of command. *Get men to follow you, not due to your position, but because you're the best soldier in the unit*. He always scored 300 on the Army physical readiness test (APRT), took the time to teach his lieutenants and sergeants and read constantly to stay current on everything impacting on the unit. His subordinates had confidence that no matter what problem arose, he could find the answer.

During preparation for an annual Army training and evaluation program (ARTEP) external evaluation (EXEVAL), the battalion staff's training recommendations concentrated on "..big hitters.," the tasks they felt make or break an EXEVAL. Captain R demanded that A Battery look beyond the "...big hitters..." *What separates good units from great ones is accomplishing the little things.* This attitude impacted everywhere—from proper camouflage to flawless technical operations, even into garrison duties. Whether leveling bubbles or stenciling numbers, attention to detail and enforced high performance was the standard for every leader.

Having supervised his executive officer's development of a strong training program, it disturbed Captain R that during his Friday afternoon reviews of the week's training, he usually found only 75 percent of planned training accomplished. At weekly battalion training meetings it was a ritual for other commanders to report "all training completed," though none of them really achieved that standard. But Captain R made a point to report to the S3 the exact tasks not completed and the reason, usually a short-fuse mission from battalion.

Though sometimes placing his battery in a poor light, the skills qualification test, common task training and ARTEP results always vindicated his programs. His honesty served the purpose of informing the battalion commander of the problems faced by batteries due to outside interference. His policy was *never be afraid to tell your boss everything*. He applied it to subordinates as well as himself. Often, when battery leaders brought problems to his attention, he immediately informed the battalion commander, even if corrective action was in progress. He believed that though he aired some of the battery's dirty laundry, his boss never feared a surprise from A Battery. Captain R also thought that A Battery's solution might help other batteries that may have the same problem. Giving the battalion commander information never hurts the battalion, though withholding it can.

As a leader, Captain R stressed that his subordinate leaders should always take a wider view of events than merely the perspective of the impact on the battery. His point was this: *don't be parochial, always look at the larger picture*. During a late-night battalion railhead operation, it was clear that Service Battery was ill-prepared to tie down its equipment. They didn't bring enough wrenches, men or NCOs to finish the job in the battalion's allotted time. The executive officers from B and C Batteries were content to "bad mouth" the Service Battery leadership and send their troops to the sleeper cars. Recognizing that the battalion could fail to meet its rail time, the A Battery executive officer recalled his commander's words. He ordered his men to assist Service Battery until the task was completed. Captain R's training of his subordinates paid the battalion dividends as his executive officer overcame the tendency to be as shortsighted as his peers.

Loss of temper was an unacceptable approach to problem-solving in A Battery. Captain R stressed often, especially to his hot-tempered executive officer, that using visual and verbal displays of anger should come as a conscious decision, only when it is the most effective leadership tool for the situation. He emphasized that use of such displays at any other time lessens their impact when you chose to use them. Men respect leaders who are calm and rational in tense situations and recognize those that lose control or approach the panic stage. He put it simply: *Leaders must get cooler as the situation gets hotter*. He felt it essential for leaders to evaluate situations with an even disposition and an analytical process which will yield correct solutions.

Seven Years Later... The truth in these principles was not always apparent to me as I diligently worked for Captain R. However, as I reflect upon my year as his executive officer, I realize the battery's many successes were tied to his enforcement of these standards and his ability to live up to them himself. I learned during that time that if you violate your own standards, you show everyone you, in fact, don't have any.

I originally wrote this article about a year after leaving the battery. Six years later, as I reflect on my own command tour and my experiences during Operation Just Cause and Desert Storm, I see that where I followed my old battery commander's guidance I was successful and where I failed to apply these rules, I wasn't. To me this is proof of Captain R's insight, and the truest test for his principles. I maintain that any commander who reflects on his unit will either smile at the presence of these principles at work in his organization or see a need for their introduction.

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Fire Support for the Divisional Cavalry Squadron

The purpose of this letter is to discuss the FA support structure for the divisional cavalry squadron; to expose the need for a habitually associated fire support system to support this type of unit; and to solicit comments from fire supporters on this subject. Insight for this letter is from Desert Storm veterans.

I have been the squadron fire support officer (FSO) for 1-7 Cavalry, 1st Cavalry Division since June 91. As such I have participated in many training exercises, including the recent battle command training program (BCTP) exercise at Fort Hood. I am convinced that the divisional cavalry squadron needs a direct support FA unit to more effectively accomplish its missions.

The 1st Cavalry divisional cavalry squadron, 1-7 Cavalry, is organized into three ground and two air troops (the extra ground troop is from the 2d Armored Division inactivation and is temporary). The squadron is assigned to the combat aviation brigade primarily for aircraft support; however, the squadron is tactically employed by the division headquarters. Unlike the regimental cavalry squadron that has a howitzer battery, the divisional cavalry squadron, with primary doctrinal missions of screening and zone and route reconnaissance, has no dedicated or organic FA support.

The nine internal 4.2-mm mortars (3 x 3 platoons) provide indirect fire support, but are limited by range, ammunition (amounts and type), inability to mass fires and the ineffectiveness of munitions on hard targets. The squadron commander can consolidate mortars to increase the volume of suppressive fires, but he normally allows each troop commander command and control of his mortars.

Cavalry units conducting a screen must provide early warning, gain and maintain contact, destroy or repel enemy reconnaissance and harass or impede the enemy with indirect fires. Indirect fire is also used to disengage from the enemy so as not to become decisively engaged. To accomplish this, the screen line must remain within range of the main body's artillery or artillery under its control.

The divisional cavalry squadron usually screens forward in a sector up to the width of the division sector. During Desert Storm, the screen line was extended as much as 90 kilometers. This is, of course, always driven by mission, enemy, terrain, troops and time available (METT-T). Obviously, mortars can't provide adequate fire support given these distances. As squadron FSO, I experienced several incidents during the BCTP exercise where I had no FA support readily available and had high-payoff targets to shoot. This usually occurred when the division's main effort was opposite of the division flank being screened.

Who responds to my call for fire (CFF)? There are several options. The first option is a quick fire channel (QFC) to a battalion

A 155-mm self-propelled howitzer battery could be the answer to the divisional cavalry squadron's need for dedicated fire support.

from a reinforcing FA brigade (if a brigade is reinforcing). The second option is a quick fire channel to a battalion in direct support (DS) of a maneuver brigade adjacent to the sector or zone in which the squadron is operating. A final option is the division's multiple launch rocket system (MLRS) battery.

Without dedicated artillery for the squadron, the quick fire channel must be established. Given priority on the QFC, the squadron can receive timely fires, assuming FA positioning within range. The disadvantages associated with the QFC are:

- The squadron must compete with units that may have priority in calls for fire.
- The observer who has priority of fires is usually not the only observer on the quick fire net.
- The fire direction center (FDC) must immediately restrict all other traffic upon receiving a CFF from the priority observer.
- If digital, the FDC must continuously review input queues to ensure immediate action of a quick fire net priority CFF.
- There is no habitual training relationship between the supporting unit and the squadron.
- Positioning of FA assets is determined by the brigade's priorities, resulting in probable gaps in coverage for the cavalry squadron.
- Communications security differences may surface causing communications problems and issues.

If a direct support FA unit is allocated to the squadron, a 155-mm, self-propelled unit is preferred. Speed and flexibility of displacement associated with such a unit better supports the squadron. Munitions such as rocket assisted projectile (RAP) and family of scatterable mines (FASCAM) further enhance the squadron's ability to survive and disengage from the enemy. The only disadvantages are combat service support (CSS) and the lack of habitual training relationship.

The divisional cavalry squadron is the only maneuver force in the division that does not have a habitually associated DS artillery unit. Given the assigned missions, typically large frontages, and the non-linear aspects of future battlefields, the divisional cavalry squadron must have dedicated fire support. A 155-mm, self-propelled howitzer battery (at a minimum) is the ultimate answer and would greatly increase the squadron's survivability and ability to accomplish its mission. Until this becomes possible, an FA battalion from the FA brigade supporting a heavy division must be subassigned the mission of DS to the division cavalry squadron. Again, training toward this lash-up may be difficult, but immediately available FA support is essential.

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1-7 Cavalry, 1st Cavalry Division
Fort Hood, TX

FIST-V Employment

There is a new, practical way to employ the fire support team-vehicle (FIST-V). The fire support teams (FISTs) need to be a battalion-level asset. The following discusses the three options listed in *FM 6-30 Observed Fire Procedures* and shows that fire support teams assigned to the task force headquarters have another employment option.

Option 1 states that, "The FIST headquarters operates together in the FIST-V to provide fire support to the maneuver company commander. This option allows the fire support officer (FSO) to be at the focal point of all fire support communications within the company zone of action" *FM 6-30,* July 1991, Page 2-3). Compared to the M1 Abrams Tank and the M2 Bradley Fighting Vehicle, the poor speed and long set-up time of the FIST-V make even option one difficult to execute. Additionally, the company FIST-V is employed

in the company battle position during defensive operations or following the company formation during offensive operations. The disadvantage is that when the company becomes engaged in a direct fire fight, so does the FIST-V. When the FIST-V is engaged, the "eyes" of the artillery are closed—or at least they blink.

Option 2 states that "The company FSO or his representative works out of the commander's vehicle. The FIST-V is positioned elsewhere in the company area to optimize its lasing and communications capability" (FM 6-30). The advantage is clear, concise guidance from the commander. "The disadvantage is that the company FSO is removed from the center of fire support activity; his ability to conduct any coordination is severely degraded" (FM 6-30).

Option 3 states that "The third option is not selected by the company FSO but is directed by higher headquarters. The company FSO and the fire support specialist take two AN/PRC 119s [man-pack single-channel ground and airborne system] and the FIST digital message device (DMD) and work from the commander's vehicle. The FIST-V and remaining equipment are used by higher headquarters as a combat observation lasing team (COLT)" (FM 6-30). The advantage is the additional COLT. The disadvantage is this option increases the coordination problems the FSO has in option 2.

I propose a fourth option, one in which all company FSOs and FIST-Vs are attached to the task force battalion headquarters and are under the operational control of the battalion FSO. The teams are assigned to a position to fight the task force fire plan and given the mission to support the company in that sector of responsibility. The advantages of this option are as follows:

1. Overwatch. Teams can be assigned in pairs while covering the entire battlefield. In offensive operations, the teams can be bounded in pairs, never placing more than one team in direct fire range at any one time. Using the FIST-V in conjunction with dismounted observation posts, perhaps based out of Bradleys, gives the battalion total fire support coverage.

2. Planning. The battalion FSO has four additional planners at his location to help in producing task force fire support documents for the battalion operation order. This gives the company FSOs the maximum time to refine planned targets along with total understanding of the task force commander's intent. FIST teams can get on the ground earlier to identify target refinement and trigger points. In addition, Copperhead planning can take place much sooner, which will help the FA battalion determine cannon battery position areas because observer positions drive the selection of Copperhead engagement areas.

3. Command and Control (C^2). The battalion FSO predetermines position areas and is able to track the FIST teams more easily, especially if the teams are employed and maneuver in pairs. It is sometimes difficult for the company FSO to clear fires prior to sending in a mission because the company commander is usually on his battalion commander's net. Because the battalion FSO is responsible for clearing all fires through the task force commander, he should have direct control of the FIST.

4. Intelligence. FIST-Vs and dismounted operations located to support the task force plan can provide total coverage of the entire battlefield. This keeps the battalion FSO and company commander informed of enemy locations, formations and numbers to enhance the scheme of fire and maneuver. Priority intelligence requirements can be assigned to fire support teams to further support the fight. Company FSOs, as battalion assets, remain focused on the task force mission and are aware of other fire support teams' missions.

The disadvantages to option 4 are that a FIST is not dedicated to each company. The FIST team is removed from the center of company-level operations. In addition, support of the FIST team, such as food, fuel and maintenance, must come from the battalion headquarters.

In conclusion, option 4 is a different way to employ the FIST-V. Of course, there are other solutions. But a combination of the options may be used. Option 4 improves the ability of the fire support team to fight with fires at the Battalion Task Force level.

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Senior Officer Logistics Management Course (SOLMC)

SOLMC is specifically designed to update commanders and their primary staffs at the battalion and brigade levels in the logistics arena. The course encompasses maintenance, supply and transportation procedures, as well as hands-on experience with vehicles, weapons, ammunition, medical, communications, NBC and quartermaster equipment. The course is open to officers in the grade of major or above in the Active and Reserve Army, US Marine Corps, and allied nations and DoD civilians in the grade of GS-9 or above. The one-week course is conducted 12 times each fiscal year at Fort Knox, Kentucky. Class quotas may be obtained through normal TRADOC channels. If you want to attend SOLMC, contact your training officer (S3/G3). For more information, call DCTN 464-7133/3411 or commercial (502) 624-7133/3411.

SOLMC Schedule
Course Number 8A - F23

	Class Number	Report Date	Start Date	End Date
FY 92	10	20 Sep 92	21 Sep 92	25 Sep 92
FY 93	1	4 Oct 92	5 Oct 92	9 Oct 92
	501	15 Nov 92	16 Nov 92	20 Nov 92
	502	6 Dec 92	7 Dec 92	11 Dec 92
	2	3 Jan 93	4 Jan 93	8 Jan 93
	3	31 Jan 93	1 Feb 93	5 Feb 93
	4	21 Mar 93	22 Mar 93	26 Mar 93
	5	18 Apr 93	19 Apr 93	23 Apr 93
	6	2 May 93	3 May 93	7 May 93
	8	23 May 93	24 May 93	28 May 93
	9	20 Jun 93	21 Jun 93	25 Jun 93
	503	25 Jul 93	26 Jul 93	30 Jul 93
	10	19 Sep 93	20 Sep 93	24 Sep 93

General Frederick M. Franks, Jr., Commanding General, Training and Doctrine Command, Headquarters, Fort Monroe, Virginia

The Reshaping of an Army

Preparing for Multiple Contingencies and Practicing the Versatility to Win Them

by Lieutenant Colonel Colin K. Dunn, Editor

As the Army moves toward a continental US [CONUS]-based contingency force, what do you see as the capabilities critical to responding to crises?

Willard Owens

General [Gordon R.] Sullivan [Chief of Staff of the Army] is reshaping our Army into a post-Cold War Army and not just a smaller version of our Cold War Army. We are reshaping both intellectually and in our training and leader development programs.

As we move toward a strategic Army, the majority of our forces will be in the United States. But forward presence also will be part of our national military strategy. So we'll deploy from either forward presence or CONUS locations.

With this strategy, rapid mobilization and deployment become increasingly important. The circumstances under which the Army can deploy are more ambiguous now than they were a few years ago. When we had the certainty of the Cold War contingencies, commanders trained and prepared to win in those particular circumstances.

Now we must be more versatile—mix and match units in tailored force packages, fight battles at the tactical and operational levels and organize our contingency theater to defeat threats in many scenarios. This versatility is critical, but we've shown such versatility before. A lot of the capabilities we demonstrated in operations such as Just Cause and Desert Shield and Storm will continue to be important for our contingency Army in the future.

What are some of the greatest challenges the Army faces in training for joint operations?

First, we have to base our training on the situations we could face—the circumstances unified commanders need their forces to practice. We must have a relevant set of circumstances or conditions within which the training takes place.

Scenarios are very important in joint operations. So, as we watch scenarios being developed in unified commands, in our schools, leader development programs and CTCs [combat training centers], they should be relevant for the US Army now and in the future.

Next, we must capitalize on the significant strengths each service brings to the operation and harmonize them in accordance with emerging joint and Army doctrine. For example, joint special operations at the JRTC [Joint Readiness Training Center, Fort Chaffee, Arkansas] harmonizes air-ground fires, both close and deep. As the organic fires of our Army systems reach out farther and farther—MLRS [multiple launch rocket system], cannon artillery, Army tactical missile system [Army TACMS], Apaches—as the ground commander can employ these assets at greater distances, that requires more coordination and more training in joint operations.

How do you see the Army increasing the lethality of our early deploying forces in a contingency operation?

We can increase our lethality in several ways. The most talked about way is through materiel solutions. Certainly, we'll pursue developing the armored gun system [Armor's lightly armored gun system with a high-velocity cannon, which is transportable by C-130 aircraft], HIMARS [Artillery's high-mobility artillery rocket system, a lightweight, wheeled version of MLRS], the Javelin [Infantry's one-man

operated, fire-and-forget, advanced antitank weapon with a 1.25-mile range] and others that give us more lethality on the ground early. Fielding the M119 light howitzer and adding fuel pods to Black Hawks, Apaches and the CH-47D model of the Chinook plus the helicopters' capability to be refueled in mid-air give us lethality options early on. Our aviation now can self-deploy as well as deploy aboard ships and inside strategic aircraft. Again, versatility is key.

Depending on the contingency's circumstances, deployment means and time available, the commander can increase the lethality of his deploying light forces by introducing other types of units early on. He can mix and match his light, special operating and heavy forces to meet that particular threat.

You'll see more mixing and matching in your NTC [National Training Center, Fort Irwin. California] and JRTC rotations as you train on contingency operations. Those CTCs are employing heavy and light forces in operations specifically aimed at developing versatility.

In the joint arena, our sister services are helping us get forces on the ground faster in contingencies. The Navy, for example, is committed to building more fast sea-lift ships in the next few years. So we'll see a dramatic improvement in our forces' ability to deploy by surface means. The Air Force has committed to the C-17. So our strategic transport aircraft capability is improving. Additionally, we can preposition Army materiel on ships at selected locations.

The materiel, force package and other solutions to increasing our lethality early on are all part of being versatile enough to meet any contingency. What we don't want to do is get locked into inflexible formulas for specific scenarios. Our doctrine should guide us—describe how to think about mobilization and deployment—how to think in terms of versatile force mixing and matching in combat, combat support and combat service support forces, etc. Using such doctrine, we would be flexible enough to organize and operate in any situation.

As the sponsor of the "Fighting with Fires" initiative being worked by the Field Artillery School, would you explain your notion of the combined arms commander's role in synchronizing operating systems?

My goal—with Major General [Fred F.] Marty, Brigadier General [Tommy R.] Franks [Field Artillery School Commandant and Assistant Commandant, respectively] and the Field Artillery School leading the way—is to ensure the Army makes the most of our increasingly lethal fires. In what General George S. Patton called the "Musicians of Mars," the combined arms commander is the "conductor of his orchestra" of operating systems performing on the battlefield. He's responsible for pulling together all the elements of combat power to fight and win. In the tactical battle, major engagements or campaigns, the elements of combat power are the same: firepower, maneuver, protection and leadership.

The combined arms commander must be as involved in the fires part of his battle as he is in the maneuver part. I want combined arms commanders Army-wide to know how to skillfully maneuver fires, and we accomplish that first in our doctrine and leader development programs and then in training. And I want those skills honed.

The lethality of our fires has increased significantly. During Desert Storm, in one-half hour we delivered more fires more effectively than World War II artillery could have delivered in eight hours. So we have extraordinary fires capabilities—and the systems and munitions under development promise even greater lethality.

MAJ Toby Martinez

February 25, 1991: In Southern Iraq, LTG Frederick M. Franks, Jr. (left), VII Corps Commander, discusses the 3d Armored Division's axis of attack with MG Paul Funk, Division Commander, and BG Paul Blackwell, Assistant Division Commander, Maneuver.

The maneuver commander must become the combined arms commander and fight more than the maneuver battle—know how to fight with fires and make them an integral part of the battle. He must be able to quickly maneuver and mass fires and skillfully employ counterfire.

If the fire support officer [FSO] plans fires as a separate entity—not integrated in the total battle by the combined arms commander—the plan ends up having little relevance to the conduct of the battle. Fires are too important to be left solely to the Artillery.

Fire planning by the FSO is certainly necessary, but the plan has to have an agility built in—an interrelationship with maneuver—to make the maximum contribution to winning. Planning is one thing, fighting is another. The fire plan can't be "put on automatic" and executed as though the enemy's not going to react to it. He will. In a fight, you've got two minds working on the same problem: the commander's and the enemy's.

How would you rate our ability to synchronize operating systems at the combat training centers (CTCs)?

I was enormously proud of the Desert Storm commanders orchestrating capabilities, at least those I observed personally. Their abilities to synchronize fires and maneuver was superb. The 1st Infantry Division in the breach, the 1st Armored Division (United Kingdom) with the 14 2d Field Artillery Brigade, Arkansas National Guard, and the 1st Cavalry Division in their raids, feints and demonstrations, the artillery raids and counterfire ambushes with MLRS, were all professional, skillful operations. The 1st and 3d Armored Divisions in their zones of action against the Iraqis demonstrated their success in employing massed fires. (I define "massed" as the fires of two or more battalions, not batteries.)

We need to continue this awareness of the capabilities of fires, an awareness forged in Desert Storm. And we need to practice it at the CTCs. I'm encouraged by some recent work at the National Training Center. Both counterfire and target

acquisition are beginning to get the attention they deserve. I also see some encouraging changes at the JRTC, such as the participation of key players, for example ANGLICO [air naval gunfire liaison company] teams. We need continued emphasis on getting every player on the combined arms team "on the field" at the CTCs. That way, combined arms commanders can train to synchronize the team.

How do you envision the future CTCs evolving to maintain our Army's warfighting edge?

We've got to ensure our practice fields remain relevant to the circumstances in which the Army finds itself. At one time we trained to fight based on the Cold War world order. Now the playing field has changed, and we've changed our training accordingly.

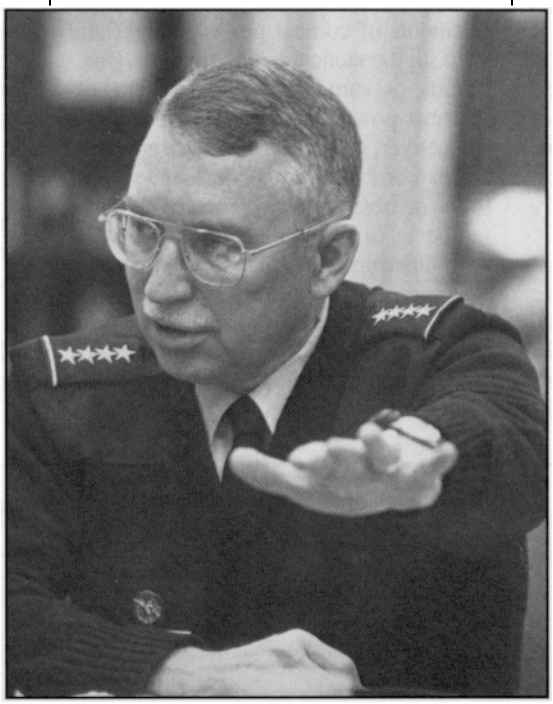
General Sullivan has directed we conduct contingency operations at both the NTC and JRTC. At the JRTC, you'll see joint operations on a continuing basis and armor-mech, light and special operating forces. You'll see light and armor-mech forces at the NTC. Units now face the threat in a variety of configurations as opposed to one threat. In our BCTPs [battle command training programs] for our divisions and corps, you'll see the same type of changes occurring. We're shifting quickly to post-Cold War warfighting.

But relevancy is key. Our training has to be relevant to the circumstances in which the Army finds itself. We must sustain excellence and relevance in training and leader development.

Current doctrine addresses the commander's intent in his concept for fires and maneuver but in general terms. What should fire support and maneuver expect from the combined arms commander?

The commander needs to precisely describe the effects he's trying to achieve and where and when he wants them. In simple, straightforward language, he should describe his desired effects in the conduct of the operation, the point of his main effort, a sensing of the speed of the operation and where it needs to be relatively tightly controlled. And depending on the echelon, the commander may have to tell where he chooses to fight the decisive battle over time. If he's the corps commander, he's probably describing two to four days of operations.

But the combined arms commander doesn't come up with his intent in isolation. Before he expresses the intent, either verbally or in the order, there needs to be continual dialogue face-to-face with subordinate commanders and his staff so he can harmonize his operating systems. He gets advice for his running estimate by talking to subordinate commanders, members of his staff, commanders of fire support and engineer units and so forth. That's the way to make the combined arms orchestra play.



Willard Owens

But when the intent arrives, then it's the responsibility of the logistician, fire supporter, engineer, etc. to say, "How can I involve my organization to best achieve the desired effects?" For example, at the division or higher level, the fire support officer should give the commander some alternatives for task organizing the artillery and weighting the effects of fires to achieve his desired outcome.

How can artillerymen best help commanders synchronize firepower?

The formulations of the intent and plan are a team effort. So the fire supporter needs to take an active role in ensuring that fires are a part of those thought processes. And that happens at all levels—company/team, task force, brigade, etc.

What the combined arms commander doesn't want to do is "sub-optimize" his systems—have each piece of the orchestra playing its own tune. He must optimize his systems at his level. The one thing the commander never wants to run out of is options, and synchronized systems give him options.

Then, the fire support officer should be close to the commander during the fight because one of the first casualties of the fight is usually the plan. The commander has to be prepared to adjust fires and maneuver and the tempo of operations. He may need to shift the point of his main effort.

For the orchestra to continue in harmony, everyone has to have his "head in the game." The fire supporter and commander have got to keep talking back and forth. If the fire support coordinator spots the need for an adjustment before the commander does, he grabs the commander to fix it.

The relationship between the commander and his fire supporter is critical from the company/team to corps levels—in a sense, all the way through the theater level. To promote that relationship Army-wide, we need continuing dialogue in our schools—Forts Knox, Benning, Sill, and Rucker—on integrating fires and maneuver. Integrating the two must be built into our doctrine, leader development programs and training.

AARs [after-action reviews] at the NTC, JRTC and in BCTP should look at this relationship during the planning for and conduct of the battle. The observer/controller or evaluator's question should be: Did the combined arms commander take full advantage of the fires available to him to accomplish his mission?

What impact do you believe future intelligence and fire support systems will have in terms of achieving success on the battle-field without major engagements of maneuver forces?

Most combined arms commanders would tell you that the major intelligence shortcoming in terms of identifying targets is their inability to see over the hill.

What they're trying to avoid is unplanned meeting engagements. Friendly reconnaissance out front, either in the defense or the attack, is of utmost importance to commanders. Our ability to see over the hill will be improved, by and large, by the UAV [unmanned aerial vehicle].

We need the ability to rapidly target and deliver fires that contribute to the overall tactical scheme. For example, in Southwest Asia, we were fortunate to have the Pioneer [UAV]. So we flew it and, with a quick-fire capability, spotted and fired on targets in real time. It's the real-time capability we're looking for in delivering fires—not only with cannons, but also with the Army TACMS and MLRS.

As far as fires substituting for maneuver engagements are concerned, you have to watch how you think about that. Fires and maneuver are linked; one contributes to the other.

Of course, it depends on the type of target you're talking about. With MLRS and Army TACMS, you can achieve lethal effects without involving maneuver forces. For example, if you're firing at a SAM [surface-to-air missile] site with Army TACMS, you can probably put it out of business.

How can the combined arms commander make the most of his fire support and aviation assets?

In the factors of METT-T [mission, enemy, terrain, troops and time available], he looks for those elements of combat power he can rapidly shift from one part of the battlefield to another. I call those "reusable combat assets." Though the commander can usually shift his artillery the quickest, his reusable combat assets also include aviation and close air support.

So the commander formulates his plan to take advantage of the reusable combat power available to him. But a fire plan is just that—a plan. The fire supporter, the aviator and the Air Force representative must understand the commander will have to deviate from the plan to seize opportunities, rapidly adjust to take advantage of situations as they occur during the fight.

The notion of positive control of indirect fire—as opposed to silence is consent—has caused some concern that there could be less responsive fires on the battlefield. What are your thoughts on this?

As we saw in Desert Storm, clearing fires quickly is critical. Certainly that's an area we'll continue to talk about and develop procedures for, especially as our artillery can fire at longer ranges.

We have to clear fires so we know the area we're firing into has no friendly forces in it. It's an issue of force protection versus the risk you incur in your situation—the commander has to weigh all the factors.

We must start with the baseline of an agreed set of tactics, techniques and procedures for using fires. We've got to establish the right joint coordinating measures. Then we need to practice them in a variety of scenarios—the more practice, the better.

Clearing fires is important in any battle, whether your clearing close air support, TACAIR [tactical aircraft], helicopters or cannon and rocket or missile artillery. It's a difficult challenge, especially on a highly mobile, fluid battlefield, using day and night, all-weather systems.

The Army's capstone warfighting doctrinal manual FM 100-5 Operations *is under revision. How is this manual changing?*

The Chief of Staff of the Army has charged TRADOC with leading the Army through this intellectual change to a post-Cold War world by using doctrine as the engine of change. A part of this effort includes revising FM 100-5. Our doctrine isn't broken. But we need to include in it the operational versatility our Army now requires in a post-Cold War era.

FM 100-5 will describe how to think about mobilization and deployment, how to think about employing Army forces in actions short of war and other intellectual changes we must make—all of which we've done before in some form or other. But the centerpiece of the revised 100-5 will continue to be fighting at the tactical, operational and strategic levels—guidelines for employing forces, conditioned by the factors of METT-T.

We're engaging not only TRADOC, but the total Army in developing FM 100-5. The process is as important as the product. If we do the process right, if we have the kind of dialogue we need, we'll accomplish two things. First, we'll inform the Army about the need for change as we change. And second, by the time we publish the manual sometime in 1993, we'll have tapped the collective wisdom of the Army to include in the revised manual. FM 100-5 is TRADOC's "point of main effort" and requires the full attention of leaders Army-wide.

What message would you send to combined arms soldiers worldwide?

We've got a great Army, and I'm proud to be part of it. It's one that's confident in itself, as proved by its successes in Just Cause, the Cold War and Desert Storm. But we have work to do. We must rapidly shift our focus from preparing to fight the battles of a Cold War world to the battles of the future. And to do that in our smaller Army, we must optimize all our combat capabilities, including making the most of our fires. So our doctrine, training and leader development strategies must evolve as we reshape the Army. Then, as we reduce forces in Europe, move units to our TRADOC installations and as our Army gets smaller, we must do it all while caring for our soldiers, civilians and their families. For those who leave the Army, we must show our great appreciation for their service in peace and war, helping to make the Army the best in our nation's history. Every Army Alumni should depart with a sense of dignity and respect.

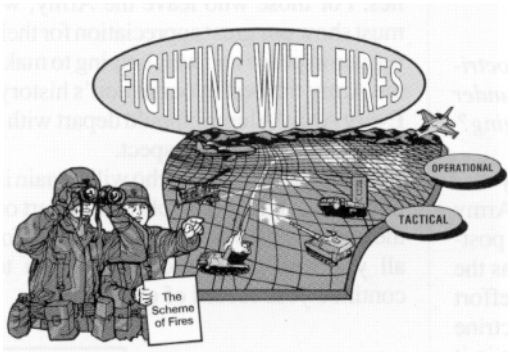
To our many soldiers who will remain in the Army, all of whom play some part on the combined arms team, I thank you for all you've done and challenge you to continue your record of excellence.

★★★★

General Frederick M. Franks, Jr., is the Commanding General of the Training and Doctrine Command, which has its headquarters at Fort Monroe, Virginia. Prior to his current assignment, he commanded VII Corps in US Army Europe (USAREUR) in Germany, deploying the corps to Saudi Arabia, Iraq and Kuwait in Operations Desert Shield and Storm. His other commands include the 1st Armored Division, Seventh Army Training Command and the 11th Armored Cavalry Regiment, all in USAREUR. At Fort Bliss, Texas, he also commanded the 1st Squadron, 3d Armored Cavalry Regiment. Other key assignments include serving as the first Director of Operational Plans and Interoperability (J-7), Joint Staff, Washington, D.C., and Deputy Commandant of the Command and General Staff College, Fort Leavenworth, Kansas. Among other schools, General Franks is a graduate of the Armed Forces Staff College, Norfolk, Virginia, and the National War College, Washington, D.C.; he holds two masters degrees from Columbia University, New York.

Fighting with Fires: *The Major Issues*

by Lieutenant Colonel
Sammy L. Coffman



The commander should address what he believes is the enemy's most probable course of action, describe how he will employ his fires and then lay out the scheme of maneuver.

Lieutenant General Wilson A. Shoffner
Commander, Combined Arms Command

This article provides a summary of some of the major issues we've surfaced at the US Army Field Artillery School while working the Fighting with Fires initiative. It also describes where we are in executing the initiative, how the issues were identified and where the initiative is headed in the future.

The issues presented in this article are not the complete "A to Z" list we've considered, refined and developed for further action. Instead, what I offer here are the most important issues at this point. Most of the issues are far from being new to the fire support community. Many of you probably locked some of these away in your cranial "memory store" several years ago. If you did, you won't be surprised that most of them have remained alive and well—they are tough to "fix." The mission of the Fighting with Fires initiative is to change that—we want to find the right solutions and put them into action.

Genesis of the Issues

The issues have come from many sources. Several are in response to a letter by Major General [Fred F.] Marty [Chief of Field Artillery and Commander of Fort Sill, Oklahoma] to senior commanders in the field asking them what we're doing right—and wrong—in the business of fire support. Other issues have come from a variety of sources—Operation Desert Storm observations, a review of fire support and combined arms doctrine, internal Field Artillery School concerns, and an ongoing contracted study of fire support effectiveness at our combat training centers (CTCs). The more we studied the issues, the more we found ourselves taking an ever-increasing look at the areas of operational fires and joint operations—clearly areas that are catalysts in our evolving AirLand Operations doctrine.

This divergent group of sources spawned the issues and descriptions of the problems presented in this article. We've categorized them in the doctrine, organization, training, materiel, leader development and soldier (DOTMLS) domains. Several issues have implications across multiple domains. To "anchor" the issues, I've included selected comments from key leaders, which amplify and underscore the validity of the issues.

Validation and Refinement

One of the key aspects of our initial concept was to build consensus in the combined arms community as we validated and refined the issues. Our main forum for this has been a series of "issues review" conferences held at Fort Sill where we presented the issues and recorded the responses of Army leaders. We also discussed the initiative with senior Army leaders around the country. Our main effort thus far includes three issues review conferences. The first was in February with deputy fire support coordinators from the corps and divisions; the second was in March with the directors of tactical departments from selected TRADOC schools and a group of serving combined arms brigade commanders. In the third conference in April, deputy and assistant commandants met at Fort Sill and further refined the issues, concentrating on those outside the fire support arena.

At each conference we asked the attendees to rate the issues—give us a sense of the relative importance of each issue with respect to the total list. The

first two issues review conference groups reached many of the same conclusions about the relative worth of most issues. After each "skull session," we reviewed and refined the issues. We used the recent Field Artillery Conference (held at Fort Sill, 31 March to 3 April) as an interim check on our work. At that conference, Brigadier General [Tommy R.] Franks, Assistant Commandant, US Army Field Artillery School (USAFAS), presented the major issues to senior leaders for their assessment and feedback.

So—here are what we believe to be the "top 12" issues.

Doctrine

Commander's Intent and Concept of the Operation. The relationship of the commander's intent to the development of an integrated concept of the operation for the operating systems is not well defined. There are few specific examples of guidance to the operating systems to aid the commander in providing essential guidance or in assisting the staff in preparing its part of the concept. We believe the current operations order format tends to "stovepipe" the operating systems at the expense of synchronization. CTC observations show that fires and maneuver are often not developed as an integrated concept of the operation.

One of these days I'm going to have fires and maneuver talked about in the same breath.

General (Retired) Richard E. Cavazos
Senior Observer, BCTP

Joint Tactics, Techniques and Procedures (JTTP). Most of our joint manuals have yet to evolve to the TTP level. Many of the doctrinal publications that have been developed are still in the "test" publication stage. Operation Desert Storm observations are clear—our current joint doctrine fails to provide essential harmonization of fires and air space coordination. Another major shortcoming is the doctrine's failure to provide a common methodology for targeting efforts by all the services.

We cannot afford to operate on an ad hoc basis as was done in Desert Storm. We must have a common [joint] doctrine ...

Major General Paul E. Menoher, Jr.
Commander, US Army Intelligence Center

Organization

Fire Support Elements (FSEs). CTC and Operation Desert Storm observations validate what we've known for some time—our FSEs are simply not robust enough to support continuous operations for split command posts. Our "light" units are even less robust. We must address the issue of providing an FSE to corps aviation units. We must also continue to refine and design fires elements for echelons above corps, to include the battlefield coordination element (BCE) and a section at the joint force level.

Authorizations within the brigade and battalion fire support elements are inadequate.

Major General John E. Miller
Commander
101st Airborne Division (Air Assault)

Tables of Organization and Equipment (TOE) and Modified TOE (MTOE) Disconnects. The field has made us aware that there are serious disconnects between the TOEs we build in the school and the resources provided by their major command (MACOM) MTOEs. For example, authorizations for combat observation lasing teams (COLTs) differ, and the brigade fire support officer position was downgraded to captain in a recent MTOE. These disconnects, compounded with numerous changes to the MTOE and rapid force modernization, are serious problems causing turbulence for our units.

We lull ourselves into complacency at the CTCs with plus-ups...no capability to go to war with sufficient guys to make it happen.

Colonel Edward T. Buckley
Commander
2d Brigade, 7th Infantry Division (Light)

Training

Combined Arms Operations at the CTCs. We continue to have problems synchronizing the operating systems, in particular fire support and maneuver. Our preliminary research indicates that our CTCs do not fully integrate the operating systems to the degree they should. Replication and

The CTCs should replicate in high fidelity what we believe to represent our warfighting experience.

Major General John H. Tilelli
Commander
1st Cavalry Division

Fire support AARs should be done for maneuver commanders, not artillerymen.

Brigadier General William G. Carter III
Commander
National Training Center

We must...[show] the actual effects that all the BOSs have. If that means restarting the mission because the combat multipliers made the enemy combat ineffective, then let's do it.

Major General John D. Robinson
Commander
US Army Aviation Center

With MLRS and Army TACMS, you can achieve lethal effects without involving maneuver forces.

General Fredrick M. Franks, Jr.
Commander
US Army Training and Doctrine Command

We've got to get artillery there quicker. They [light divisions] need the systems, they need the lethality...its clearly artillery they need.

General Edwin H.Burba, Jr.
Commander, Forces Command

We need to pay for victory with "smart" firepower...not lives.

Lieutenant General Wilson A. Shoffner
Commander, Combined Arms Command

Training at CGSC, war college and PCC should address...a process that provides combined arms commanders with the best chance of synchronizing fires.

Major General S. L. Arnold
Commander
10th Mountain Division (Light)

Training of combined arms commanders to synchronize fire support must be taught throughout our service school system.

Major General Marvin L. Covault
Commander
7th Infantry Division (Light)

relative importance of the operating systems varies considerably among the different CTCs. After-action reviews (AARs) are not as fully integrated as they could be; for example, some CTCs conduct separate AARs for the fire support and maneuver operating systems. Often, the relationship between the results of fires (what happened) and the commander's concept for fires (what the commander wanted to happen) is not addressed.

Simulation Support and Fire Support Replication. Current replication deficiencies in both home-station and CTC training cause combined arms commanders to rely almost entirely on their direct fire systems. The bottom line is that direct fire systems turn on the opposing forces' "lights"—indirect fires don't, or at least not as well as they should. Naturally, the combined arms commander is most actively involved in directing and integrating those systems that give him the highest payoff. As a result, combined arms commanders are not developing the skills to "orchestrate" their fire support. Although we will probably never have systems that are capable of totally replicating the actual battlefield destructiveness of fire support systems, our currently fielded systems vary considerably and leave much to be desired. We must "decrease the delta" between perfect replication and what we have today.

Materiel

Increased Range and Need for Precision Munitions. We are "outgunned" by world standards today. We need to be able to shoot as deep as we can see. Our flexibility in supporting the combined arms commander is tremendously increased by combining increased range with some of the precision munitions under development. Unfortunately, many of these munitions have either fallen to the budget ax or are likely to fall. But increased range and smart munitions have the potential to enhance early deploying lethality and reduce sustainability burdens. We must continue to champion progress in these areas.

Lethality for Early Deployers. As we move rapidly to a contingency-based Army, our ability to quickly project power worldwide is all the more important. Many Army leaders have recognized that fire support has the potential to significantly increase our combat power in the early days of a contingency operation. To leverage this potential combat power and enhance our agility, we must develop and field lethal fire support systems capable of rapid deployment.

Leader Development

Training of Combined Arms Commanders. We must do better in our training of future combined arms commanders to synchronize combat power. We need an institutional training strategy that readies them for their role as a "combined arms commander." We must begin this process early in their careers if we are to level the sharp learning curve that exists at the lieutenant colonel and colonel command levels. Our training must do more to develop synchronization skills for commanders in all the operating systems (and fire support in particular) if we are to better integrate the operating systems at the CTCs. We must also refine and develop simulations that support integrated, combined arms sustainment training for the combined arms commander and his staff at home station.

Training for Fire Support Officers. The combined arms community has told us that our FSOs need a better understanding of the dynamics of maneuver operations. Fire supporters have told us that we must arm them with more "how to" skills. We must also do more to prepare our officers for senior-level fire support positions in the division and above. Today there is little formal training to prepare our field grade officers for these positions.

Soldiers

13F Retention and Promotion. Fire support specialists and NCOs are critical to fire support operations; the problem is that they continue to be critically short in divisions throughout the Army. Retention rate problems are compounded by high cut-off scores for promotion. Combine a low pomotion rate with a great amount of field duty for that military occupational specialty and keeping good fire support soldiers in the Army remains a challenge for Field Artillery leaders.

Lightweight Gear. Several pieces of equipment carried by fire support personnel in our light units simply don't meet the needs of light fighters who often move considerable distances on foot. Among some of the noted lightweight items needed are small secure radios, laser designating devices and digital message devices.

Where We're Going

The development and refinement of issues will continue through mid-May. Then we'll staff the issues within USAFAS to see which ones are within our ability to solve. For those, we'll develop detailed action plans. At the same time, we'll staff those issues outside the fire support arena to the appropriate TRADOC schools for final resolution. We realize that many will require cooperation and assistance throughout TRADOC, and even Army-wide, to bring about the necessary changes. Some issues will only be resolved through the acquisition of new systems—a process that we try hard to influence but certainly do not control.

An interim phase of the initiative will be completed with a report to the TRADOC Commander in September 1992 identifying those issues requiring further work and proposing solutions for others. The Fighting with Fires initiative is a long-term process, not a one-shot "school solution."

In future issues of ***Field Artillery*** and other branch journals, we'll continue to update you on other key issues, where we are in developing solutions and where we're going next. We'll need the help of the entire combined arms team to keep us focused along the way.

For more background on the Fighting with Fires initiative, see Major General Marty's "On the Move" column in this issue and a previous article by the author, "Fighting with Fires Initiative: Goal—Synchronized Combat Power," in the February 1992 edition of ***Field Artillery.***

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To sell fire support successfully, those junior officers [FSOs] must know fundamentals of maneuver tactics.

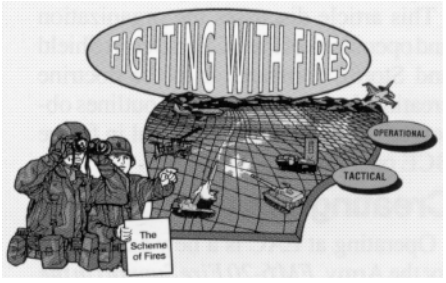
Major General John E. Miller
Commander
101st Airborne Division (Air Assault)

FSOs lack an understanding of maneuver operations in general. They must be able to visualize maneuver on the battlefield.

Colonel Thomas A. Dials
Division Chief, Command and Staff Department
Armor and Cavalry Tactics, Armor School

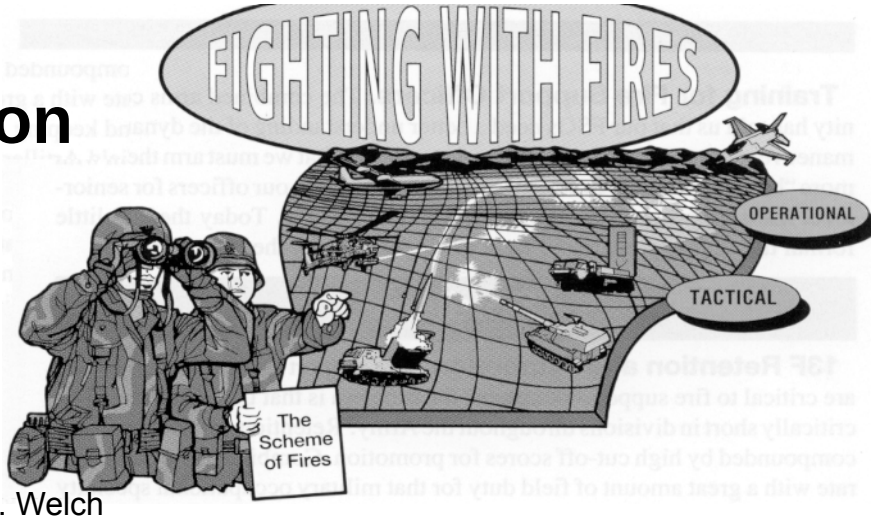
Two materiel acquisitions that will dramatically improve fires for the light division are a light laser designator to replace the G/VLLD in the division and a light, long-range rocket system [HIMARS] in support of the division.

Major General Marvin L. Covault
Commander
7th Infantry Division (Light)



Notes from the BCE

Observations on Joint Combat Operations at Echelons Above Corps



by Lieutenant Colonel William G. Welch

Iraq's invasion of Kuwait on 2 August 1990 set in motion the largest, fastest deployment of Army forces in history. For the first time since the Korean War, we established a field army headquarters for combat operations, the headquarters for Operations Desert Shield and Storm.

But our field army headquarters needed a land component commander—as was envisioned in doctrine—one with a role comparable to the headquarters' air component commander. The Army's battlefield coordination element (BCE), an echelons-above-corps (EAC) organization designed to synchronize joint combat operations, would have been more effective working for a land component commander instead of through the Air Force chain of command. Further, the Army and Air Force need to better understand their sister service and communicate their requirements, capabilities and limitations to make the most of our joint firepower in future contingencies.

This article discusses the organization and operations of the BCE in Desert Shield and Storm, compares it to the doctrine creating the organization and outlines observations that could be helpful in future BCE operations.

Creating the BCE

Operating at EAC is a new experience for the Army. *FM 6-20 Fire Support in the AirLand Battle*, the Army's fire support manual, devotes only two paragraphs to the subject. One of those deals with a unique Army organization, the BCE.

The development of the BCE was based on the 31 Joint Initiatives Memorandum of Agreement between the Army and the Air Force Chiefs of Staff in May 1984. Initiative Number 21 was to establish a process for synchronizing battlefield air interdiction (BAI) with maneuver for theater, Army, multi-corps and contingency corps operations and to field test these procedures. It also tasked the services to

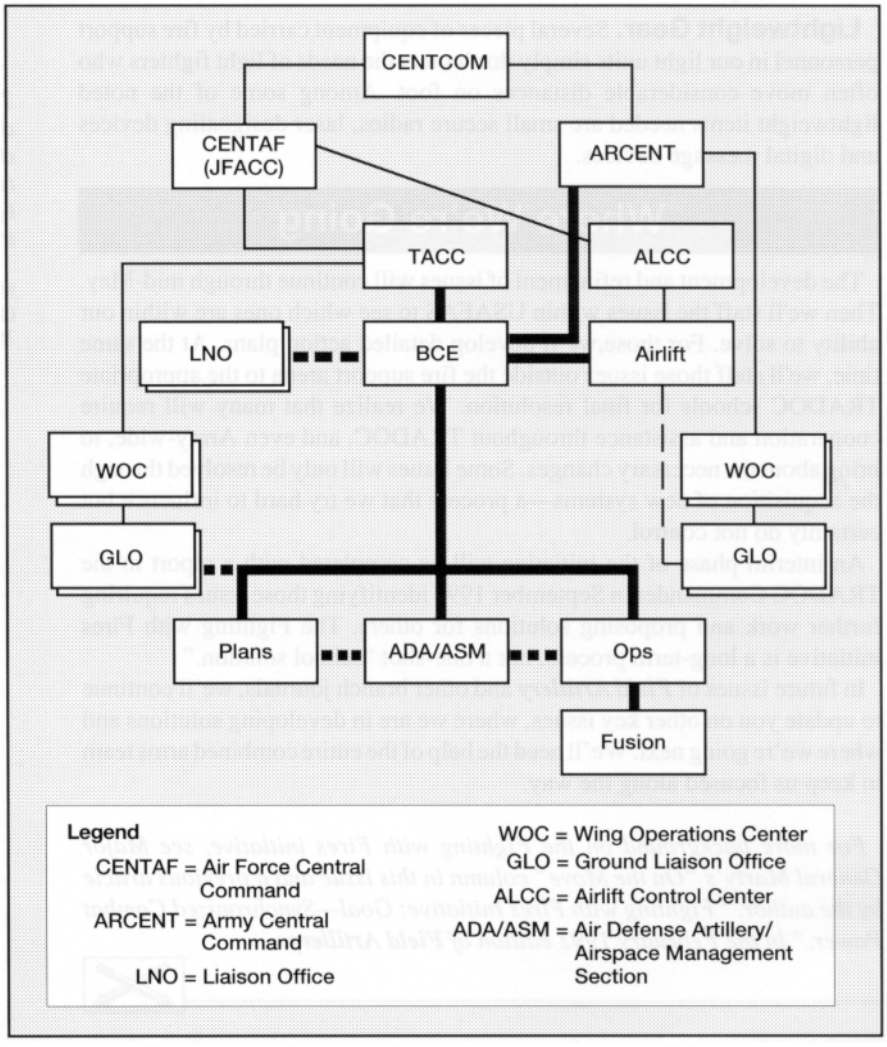


Figure 1: BCE During Desert Storm. The BCE operated in the TACC at the Joint Force Air Component Commander's (JFACC) Headquarters. This is the highest level in the Air Force tactical air control and Army air-ground system.

automate the process and connect it via near real-time data links.

The Army's solution was to create an organization that operates with the Air Force's Tactical Air Control Center (TACC); the organization was the BCE. With the Air Force, the Army published the "Training and Doctrine Command (TRADOC) Pamphlet 525-45 Joint Attack of the Second Echelon" to provide procedures for BCE-TACC operations.

Before Operations Desert Shield and Storm, the BCE concept was tested extensively in joint exercises, most prominently the Air Force's Blue Flag series. The BCE also deployed a detachment to Operation Just Cause in Panama. Just before Iraq's invasion of Kuwait, the BCE participated in the Central Command (CENTCOM) Exercise Internal Look 90. It proved to be a dress rehearsal for what was to come.

BCE Organization for War

Alerted on 7 August 1991, the BCE deployed from Shaw Air Force Base, South Carolina, to Riyadh, Saudi Arabia, on 14 August 1991. Its mission was to help synchronize the air campaign with Army ground operations by coordinating air support and exchanging operational and intelligence data.

The BCE operated in the TACC at the Joint Force Air Component Commander's (JFACC's) Headquarters. This is at the highest level in the tactical air control and Army air-ground system. (See Figure 1.)

The TACC had four main divisions. (See Figure 2.) The Combat Operations Division, with intelligence support from the Enemy Situation and Correlation Division (ENSCD) of TACC, executed "today's" war. Airspace management and air defense coordination were handled by small sections in the Combat Operations Division. The Combat Plans Division, supported by the Combat Intelligence Division, planned tomorrow's war.

Located close to the TACC and also reporting to the JFACC was the Airlift Control Center (ALCC). It controlled all intra-theater airlift in response to the requirements of the Joint Movement Control Center (JMCC). Wing operation centers (WOCs) took their guidance and orders from either the TACC or ALCC, as appropriate.

The BCE, a modification table of organization and equipment (MTOE) unit, had seven sections and 28 personnel to conform to the TACC organization. The BCE included four-man sections to operate

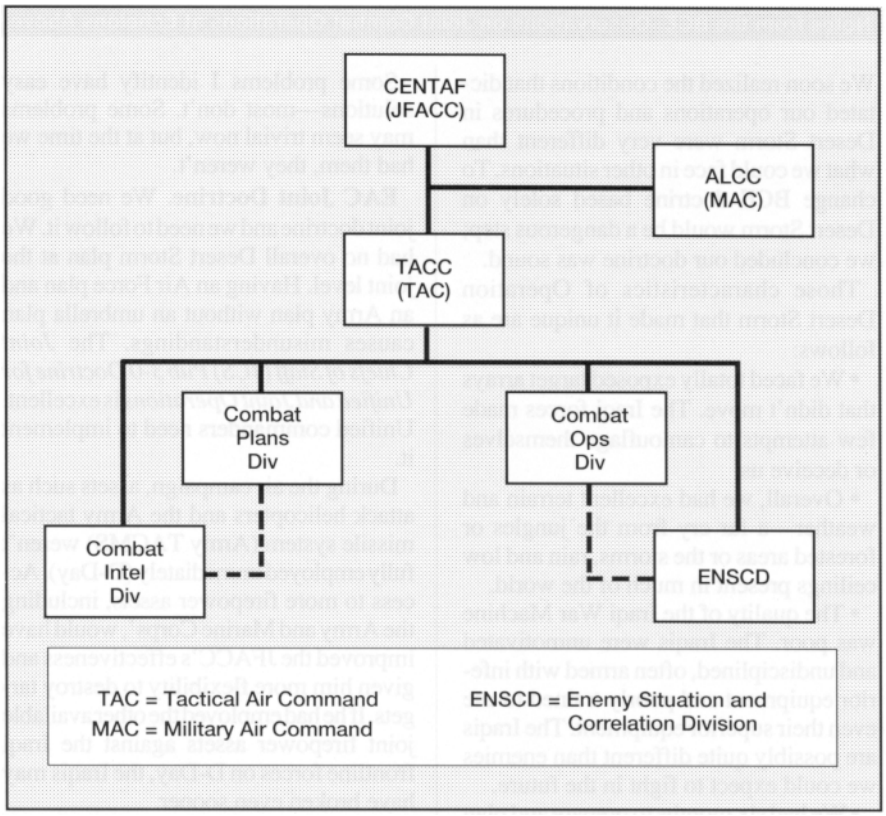


Figure 2: TACC Organization. Usually located near the Airlift Control Center (ALCC), the TACC has four main divisions for the Air Force to plan and execute current and future wars.

with each division of the TACC and ALCC. An Air Defense Artillery/Airspace Management Section (ADA/ASM) in the BCE operated in both today and tomorrow's wars, accomplishing planning and immediate coordination.

In a multi-corps environment, each corps provides a liaison officer (LNO) element for the BCE. In Saudi Arabia, the Royal Saudi Land Forces and the US Marine Corps provided LNOs. Ground liaison officers (GLOs) represented the Army down to the Air Force wing level.

BCE Operations in War

After deploying to Saudi Arabia, the BCE daily planned air operations for the defense of that country (Operation Desert Shield) and also with the Air Force's Special Planning Cell ("The Black Hole") for the offensive air campaign. During Desert Shield and Storm, the function of the BCE was to—

1. Provide the "ground picture" to the JFACC and TACC staffs. The BCE usually accomplished this at staff briefings but also coordinated extensively face-to-face throughout the TACC.

2. Relay and interpret Army Central Command (ARCENT) requests for air support and track the current air tasking order. This included not only "hard kill" BAI and preplanned close air support (CAS) targets, but also integrated electronic warfare, tactical air reconnaissance and psychological operations missions.

3. Exchange operational and intelligence data between ARCENT and the Central Air Force Command (CENTAF). Especially critical was target data and operational information.

4. Deconflict airspace requirements, including scheduling Army fixed-wing aircraft in the air liaison officer (ALO) section and integrating Army air defense operations into the air campaign. A key function also was to help develop air defense rules of engagement (ROE).

5. Coordinate airlift support for ARCENT operations.

6. Provide feedback on the air campaign to ARCENT Headquarters. This included battle damage assessment (BDA).

The interface point for the BCE at ARCENT Headquarters was the Deep Operations Cell, which functioned as a fire support element (FSE).

Learning from War

After Desert Storm but before redeploying, BCE personnel began writing what we had learned in our unique operation.

We soon realized the conditions that dictated our operations and procedures in Desert Storm were very different than what we could face in other situations. To change BCE doctrine based solely on Desert Storm would be a dangerous step; we concluded our doctrine was sound.

Those characteristics of Operation Desert Storm that made it unique are as follows:

• We faced totally exposed target arrays that didn't move. The Iraqi forces made few attempts to camouflage themselves or deceive us.

• Overall, we had excellent terrain and weather—a far cry from the jungles or forested areas or the storms, rain and low ceilings present in much of the world.

• The quality of the Iraqi War Machine was poor. The Iraqis were unmotivated and undisciplined, often armed with inferior equipment and poorly trained to use even their superior equipment. The Iraqis are possibly quite different than enemies we could expect to fight in the future.

• We had six months to prepare and plan for war—a luxury we shouldn't count on in the future.

Throughout Desert Shield and Storm, every effort was made to keep losses as low as possible. Mission and tactical considerations took a "back seat" to keeping casualties low. For example, during Desert Storm, US Air Force aircraft never operated in low-level airspace with their extensive gun-air defense systems. This reduced the effectiveness of target identification and bomb aiming systems on some aircraft, but it saved lives.

In dealing with friendly fire, we explored and tested every possible solution to prevent "blue-on-blue" attacks. At times, our measures seemed to border on an obsession. But events in Desert Storm proved we were justified.

In making decisions about and planning for combat operations—from the President to the platoon leader—saving American servicemen's lives always will be a major consideration. But our enemies cannot be led to believe the strength of our national resolve is tied to the number of casualties we could suffer.

Presenting Opinion

In the following paragraphs, I outline my observations on several operations at the BCE or related to it. I'd like to emphasize these are *personal opinions*. These observations are considerations for joint operations in the future.

Some problems I identify have easy solutions—most don't. Some problems may seem trivial now, but at the time we had them, they weren't.

EAC Joint Doctrine. We need good joint doctrine and we need to follow it. We had no overall Desert Storm plan at the joint level. Having an Air Force plan and an Army plan without an umbrella plan causes misunderstandings. The *Joint Chiefs of Staff (JCS) Pub 3-0 Doctrine for Unified and Joint Operations* is excellent. Unified commanders need to implement it.

During the air campaign, assets such as attack helicopters and the Army tactical missile system (Army TACMS) weren't fully employed immediately (D-Day). Access to more firepower assets, including the Army and Marine Corps', would have improved the JFACC's effectiveness and given him more flexibility to destroy targets. If he had employed the other available joint firepower assets against the Iraqi frontline forces on D-Day, the Iraqis may have broken even sooner.

Fire support coordinators (FSCOORDs) need to be appointed at all levels of command, including unified commands, to ensure all fire support assets are coordinated to bring maximum firepower to bear on the enemy. The joint FSCOORD should be the component commander responsible for the preponderance of firepower in the theater or a special staff officer of the commander-in-chief (CINC).

A new title for him could be the Joint Force Interdiction Coordinator. He should have the power to task components to accomplish missions in the interdiction campaign.

Joint Tasking Order. A system of joint targeting and tasking that uses all available combat power needs to be developed—regardless of the component to execute the interdiction campaign. The traditional way of begging the Air Force for assets causes more problems than it solves. Who supports whom?

If all components had to support the CINC through an integrated tasking order, we could more efficiently make the most of our combat power. The components all have assets that can play a role—special operations force (SOF) teams, Tomahawk missiles, Army TACMS, F-117 aircraft—each with capabilities we need to exploit effectively. This is a excellent arena for a joint targeting computer system.

Land Component Commander. In TRADOC Pamphlet 525-45, the BCE doctrinally works for the land component commander. (See Figure 3.) In Desert Storm, we were assigned to the ARCENT Commander. The land component commander's role was retained by the CINC.

Because there was no single voice in the TACC to express the land component commander's wishes, there were misunderstandings, and we wasted effort. We need to have land component commanders for all EAC operations, and BCEs need to work for them.

Air Force "BCE." The BCE concept works and provides the information the Air Force needs to support the Army. The Army headquarters needs a similar element to explain what the Air Force is doing in combat and why it's doing it—one ALO isn't enough. We need an Air Force BCE at the Army forces level to help plan and execute war.

Deep Operations Cell. The ARCENT Deep Operations Cell was insufficiently manned to perform its functions during Desert Shield and Storm. The cell wasn't fully manned until just before Desert Storm, which didn't allow the new personnel enough time to train for their mission.

As the FSE element at Army level, the Deep Operations Cell is critical. It does more than figure out what the Air Force does for the Army. It should be involved in SOF operations and those of all deep-strike assets, such as attack helicopters, Army TACMS and long-range surveillance teams (LRSTs). These assets did a superb job in the time they had, but they should have been deployed earlier.

The same can be said for the 513th Military Intelligence Brigade's Targeting and BDA Sections that worked from "behind the power curve" throughout Desert Storm. They did great work, but they should have been deployed earlier.

Space-Based Intelligence and Communications. Using space-based systems significantly enhanced our capabilities in Desert Storm.

Weather, intelligence and early warning satellites played key roles. Communications at all levels depended on satellite relays. Using them, Patriot missiles proved we can protect ourselves from tactical ballistic missile attacks. Yet we must be aware that anti-satellite systems are coming on line in the near future.

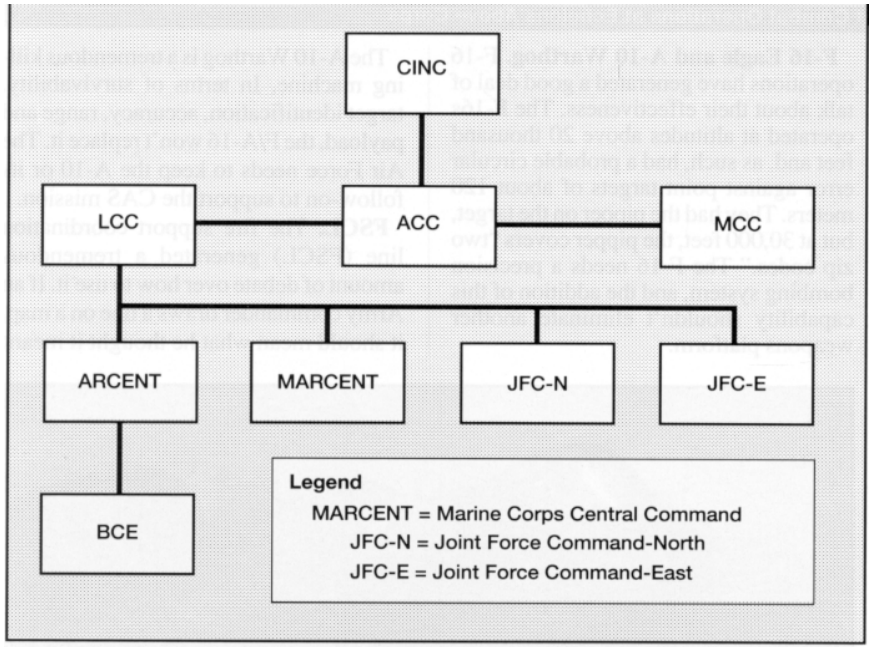


Figure 3: Doctrinal Chain of Command for the BCE as Applied to Desert Storm. In TRADOC Pam 525-45, the BCE works for the Land Component Commander (LCC), who is on an equal level with the Air Component Commander (ACC) and Maritime Component Commander (MCC). In Desert Storm, we needed an LCC—as in all EAC operations.

To exploit the use of space, we need trained experts to advise unified commanders. In addition, we need a space operations component commander under the CINC to manage the "Star Wars" aspects of future conflicts.

RPV. The Army needs a real-time photographic reconnaissance capability of its own. National satellite or Air Force tactical air reconnaissance systems are too slow for modern battlefield operations. The Army needs remotely piloted vehicles (RPVs) for the immediate identification, attack and damage assessment of targets.

Computers. This was the first automated war—Harvard Graphics became the standard. We need to develop hardware and software that assists decision-making, not just record keeping. Standard functions need to be done inside the computer without human interference or opportunities for mistakes. Joint targeting and BDA are areas where automation could save time and effort. Good software can shorten an air tasking order cycle that's too long.

Data transfer should become a requirement for all our communications systems. Phones and FAX are too slow and inefficient. We need a standard data system for all services. With MS-DOS, we had it—now we're losing it. We need a solid, inter-service networking system through which to pass operational and intelligence data.

The decision-making and assisting powers of computers need to have priority for research and development. The "box" needs to work for us, not turn our captains and majors into data-entry clerks or chart drawers.

Common Survey. The "world" is on two different survey systems: WGS72 and WGS84. We need to identify which of our computers operate on which system and standardize across the systems. In Desert Storm, we dropped a lot of B-52 bombs short and left of targets until we figured that out.

BDA. This area was the weakest of our BCE operations in Desert Storm. Two thousand sorties a day generate a lot of reports; we didn't have a good system to deal with the volume of information, and it caused problems.

The BCE should have a sophisticated joint targeting computer system. We need to let the box add up the numbers—we can ask it questions. The mission report or "push pin" manual system isn't responsive enough for our decision makers.

BCE TOE. The number of personnel we needed to run the BCE and the TOE authorizing personnel in the BCE are pretty close. But we needed more people in the Fusion Section to process BDA and validate targets and a BCE deputy to take shifts for the chief. Having a colonel assigned as the BCE chief just before Desert Storm helped raise our effectiveness.

LNOs. The LNOs from the corps are indispensable in a multi-corps environment. They can pass information quickly and efficiently on targeting, BDA, fire support coordinating measures (FSCM) and the like. They also saved a lot of US lives by preventing potential fratricide incidents along boundaries. They were worth their weight in gold.

ABCCC. The Airborne Communications Control Center (ABCCC) is a great platform. It can direct the air campaign superbly. However, the ABCCC must have accurate, detailed guidance to function properly or it can "walk away" from the commander's concept and hurt as much as it helps.

Air Force Support. There was some talk that the Air Force wasn't supporting Army commanders in shaping the battlefield before the ground campaign. Having worked at the Army's BCE with the Air Force, I would compare the relationship to that of me and my wife. She doesn't always do things the way I would or on the same time schedule. Sometimes her priorities are different. There are times when we have to agree to disagree. But when I consider everything, I don't want anybody else's wife and I don't want anybody else's Air Force.

While working in the BCE, a senior Air Force officer commented to me that you can never *trust* the Air Force. I now understand what he meant. The Army is never *guaranteed* air support. The Air Force has many problems or other priorities that effect air operations, problems that we in the Army don't know about or understand. But we can count on them to support us with everything they have when we really need them.

During the air campaign, the word to Air Force personnel was there was no target worth dying for—they could always come back the next day. Just before the Army went forward, the word went out to all wings that now there was something to die for and to "get down in the dirt" and support the Army. If we really need the Air Force, they'll be there.

Communication with and understanding of how the Air Force operates and what it can and can't do is the key to

success. All fire supporters should attend the Air Force Battle Staff Course at the Air Ground Operations School at Hurlburt Field, Florida

The Army needs to emphasize using air power efficiently and not try to control air power. Too much ground force control causes waste and delays. Aircraft need to go forward, bomb, return, rearm and restrike. Aircraft can waste time in orbit or on ground alert.

Tying aircraft too closely to a ground commander isn't efficient. The most efficient and effective use of air power is for the land component commander to provide the JFACC his targeting objectives, requirements and the targets he wants destroyed and then let the Air Force decide the best way to accomplish the mission. The key is to communicate the type of targets and desired effects.

And for the Army to count sorties is counterproductive; the Air Force knows its business—what aircraft and munitions are available and are most effective against the target. Counting sorties would be the same as the Air Force measuring Field Artillery's effectiveness by counting salvos. One of our multiple launch rocket system (MLRS) rockets will do as much damage as 7.3 155-mm rounds, in terms of submunitions. But, in general, we'd employ our rockets against a longer range target that needs a short, violent attack over a relatively broad area and employ our 155-mm rounds against a shorter range target covering a smaller area. So counting our salvos also would be counterproductive.

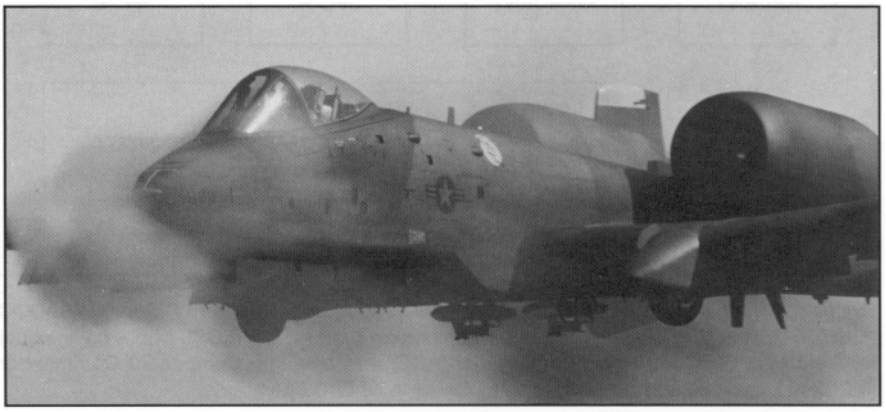
Air Superiority. Air superiority makes it easy. In our Southwest Asian Theater and using precision weapons, the Air Force led as the chief target killer. The main reason for the ease of the ground campaign was early achievement of air superiority and the fact that the preparation of the battlefield, both strategic and tactical, was allowed to proceed unhindered. Weather posed a greater threat than the Iraqi Air Force.

The availability of massive and unrestrained firepower from the air made it easy for the lead ground forces to accomplish their missions. This air firepower destroyed the enemy's weapons, disrupted his command and control, cut his supply lines and crippled his will to fight back. *As proven, once again, in Desert Storm, the priority mission of the Air Force should be to achieve air superiority*.

F-16 Eagle and A-10 Warthog. F-16 operations have generated a good deal of talk about their effectiveness. The F-16s operated at altitudes above 20 thousand feet and, as such, had a probable circular error against point targets of about 120 meters. They had the pipper on the target, but at 30,000 feet, the pipper covers "two zip codes." The F-16 needs a precision bombing system, and the addition of this capability shouldn't eliminate another weapons platform.

The A-10 Warthog is a tremendous killing machine. In terms of survivability, target identification, accuracy, range and payload, the F/A-16 won't replace it. The Air Force needs to keep the A-10 or its follow-on to support the CAS mission.

FSCL. The fire support coordination line (FSCL) generated a tremendous amount of debate over how to use it. If an Army commander draws a line on a map, it should mean what he thought it meant



The A10 Warthog (top) and F16 Eagle (bottom) are effective weapons platforms, but the F16 needs a precision bombing system on board.

when he drew it. When higher headquarters change the rules, it causes unnecessary confusion in an already extremely confusing situation. The services need to agree to a detailed definition of the FSCL and stick to it.

Airspace Deconfliction. Army TACMS fires can be deconflicted for airspace in 30 minutes or less. That's all the time the Air Force needs. We need to *hold* them to it. We also need to work on ways to make airspace deconfliction faster.

CAS. Push CAS teamed with the ABCCC provided all the support we could use. In the future, CAS may not always be available in unlimited quantities.

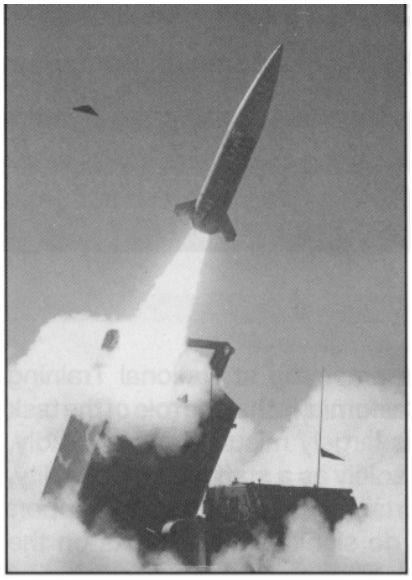
We need to wargame our requirements for CAS and include it in our plans. We shouldn't fall back on ground-alert CAS because we don't plan them well, and our communications capabilities make any combination of air support possible. To be efficient and flexible, we must think the problem through and know what we want and what we *need*.

PGMs. Precision-guided munitions (PGMs) were a hallmark of Desert Storm and revolutionized air support. They knocked out the fire trench distribution systems and "tank plinked" individual tanks of the Republican Guards. They defeated Iraqi tanks buried and in berms and minimized collateral damage. Also, the strategic part of the air campaign could not have been as successful without them. The destruction of bridges and subsequent isolation of the Iraqis in the Kuwaiti Theater of Operations would have taken years without PGMs.

But these munitions are not without their problems. Our high-speed anti-radiation missiles (HARMs), which are precision air-ground missiles, will home in on our radar systems as well as the enemy's—we need software to protect us from ourselves.

Berms and Trenches. The Iraqi's use of high berms and trenches to protect their armored vehicles worked well until we switched to precision munitions (glide bomb units, or GBU 12s). We should use berms and trenches when we face enemies who don't have precision munitions. To support this, we need to retain good engineer capabilities at all levels.

Battlefield Duds. We need to take a hard look at using cluster bomb units (CBUs) in offensive operations. CBUs create a small minefield of duds on the battlefield. We could track Gator (CBU-89)



Army TACMS fires can be deconflicted for airspace in 30 minutes or less.

mine use in Desert Storm, but not other PGMs. There were massive numbers of cluster bombs on the battlefields—more than 31,000 CBUs (17,300 tons) delivered by the Air Force along with those from the Army's dual-purpose improved conventional munitions (DPICM). Duds were everywhere and posed a hazard to ground troops moving forward.

Friendly Fire. Tactical Air Control Parties (TACPs) should take the lead in preventing friendly fire losses from the air. Passive markings help identify our forces, but they aren't enough. Identification friend or foe (IFF) devices for tanks and vehicles are probably too expensive and maintenance-intensive and, therefore, may not be as tactically smart as they first appear.

Human beings are the key to solving the friendly fire problem. TACPs need to be aggressive in knowing what aircraft are operating in their areas and the location of all friendly troops assigned and attached to their units. Only with such knowledge can we prevent the majority of friendly fire incidents. Training and discipline are the ultimate answers to the fratricide problem.

Innovativeness. The greatest strength of the American forces is our soldiers, sailors, Marines and airmen. Before Desert Storm, many problems ended up in the "too hard" box or received too low a priority in peacetime and were never solved. Our young NCOs and officers have, once again, come forward and given us solutions.

We must maintain an environment in which they're trained and led in an atmosphere where they can come forward with the ideas and actions that win us wars.

Conclusion

Operations Desert Shield and Storm validated the concept of the BCE and proved its value in synchronizing the joint battlefield—a critical function. Probably the best testimony to the BCE's effectiveness is the many calls from all over the Army asking how to form a BCE at each headquarters.

The 1st Battlefield Coordination Detachment (BCD) at Fort Bragg, North Carolina, attached to the XVIII Airborne Corps, is currently the only active component BCE ready to support worldwide contingency operations. It's supported by the 2d BCE of the Alabama US Army Reserve.

A third BCE is deployed with the 7th Air Force in Korea. In Europe, the Ground Liason Office handles the BCE functions.

Future wars will be characterized by the requirement to rapidly deploy joint forces and apply overwhelming combat power. The BCE is a key to making joint warfare work—to synchronizing our total combat power and defeating the enemy quickly and with minimum loss of US lives.

Lieutenant Colonel William G. Welch until recently was the Senior Plans Officer for the 1st Battlefield Coordination Element (BCE), XVIII Airborne Corps, Fort Bragg, North Carolina. During Operation Desert Storm, he deployed with the 1st BCE and served as its Plans Officer. Currently, Lieutenant Colonel Welch is the Chief of the Ground Operations Division, Warrior Preparation Center, part of the Headquarters of the US Air Force and Army in Europe (USAFE and USAREUR) in Germany. He commanded B Battery, 2d Battalion, 1st Field Artillery, 214th FA Brigade, Fort Sill, Oklahoma; and Headquarters and Headquarters Battery, 3d Battalion, 79th Field Artillery, 42d FA Brigade, Germany, and served as the S3 and Executive Officer of the 5th Battalion, 15th Field Artillery, I Corps Artillery, Fort Ord, California.

The Successful Task Force FSO

by Major Andrew B. Fontaness

To be effective...requires dependable artillery knowledge and experience, as well as knowledge of maneuver combat methods, and a lot of initiative.
Fuhrung der Artilleric

One of the most important trends emerging at National Training Center (NTC) rotations at Fort Irwin, California, is that the role of the task force fire support officer (TF FSO) is largely misunderstood. Sadly, many units characterize the TF FSO solely as a staff officer. In reality, the TF FSO is one of the most important warriors in the fire support business. What he does or fails to do significantly impacts on the ultimate outcome of the mission.

Though he does some staff functions, the TF FSO isn't just a staff officer—he's the executioner of fire support. As a warrior, his tools are target acquisition, artillery, mortars, close air support (CAS) and his fire support section.

Perhaps we misinterpret the role of the TF FSO because we, in the Army, have few opportunities to fully employ all our fire support assets in a stressful, high-intensity environment. Short of war or a rotation at one of the Combat Training Centers (CTCs), our TF FSOs rarely face the challenge of pulling it all together as the executioner.

This article focuses on what makes a TF FSO successful—his qualities and attitude.

Qualities

The above quotation from *Fuhrung de Artilleric*, a German field manual printed in 1940, describes the qualities the German Army believed an FSO should have—the same qualities successful US Army TF FSOs have in the 1990s. While a good FSO can't always assure success on the battlefield, an inexperienced, untrained or incompetent one can assure the failure of the finest of fire support.

A TF FSO must be technically competent.

The TF FSO's knowledge of fire support must extend beyond the textbook and include what fire support systems can do under various conditions. Frequently, an inexperienced TF FSO plans targets without considering the impact that rates of fire, time of flight and the enemy's rate of march has on the probability of a target hit. The result is artillery can't shift fires fast enough to keep up with a moving enemy.

Another error the FSO often makes is not considering how long it takes artillery to fire a family of scatterable mines (FASCAM) minefield. Usually, there's a great difference between the time the "book" says it takes and the time the artillery takes. Tube availability, gun crew fatigue and executing multiple fire missions all contribute to the artillery's slower time to emplace FASCAM.

The FSO must understand the importance that observation has on fire support. Simply put, you can't attack a target you can't see. Observation doesn't just happen—the FSO plans for it. To do so requires the FSO to understand the capabilities and limitations of his fire support vehicles (FSVs) and dismounted observers. Furthermore, he needs to know what the scouts and S2 can and can't do for him.

Unfortunately, many FSOs don't understand the capabilities of the resources they have. It's common to see FSV crews poorly positioned to observe targets or working independently of each other and the scouts to the detriment of the task force.

The successful TF FSO knows mortar operations and treats mortars as an integral part of his fire support team. The relationship of the mortar platoon leader to the TF FSO is like that of the right arm to a boxer. Just like the boxer, the FSO knows how to combine the punches of the "right arm" mortars with that of his artillery, a highly lethal combination.

Too often, CAS is a mystery to TF FSOs. This mystery is probably a byproduct of a policy many units have of not allowing their TF FSOs to use CAS. This is an error on the units' part, for we might not have the luxury of CAS' always being controlled at the brigade level.

There are many situations in which a brigade has to pass control of CAS to a task force. For example, the task force may control CAS to prevent fratricide

when the brigade FSO and air liaison officer (ALO) can't see the target area. The TF FSO must understand how to control and synchronize CAS with artillery and maneuver.

A TF FSO must have initiative and vision and be creative.

Though all FSOs must have initiative, the TF FSO, in particular, also must be able to envision the battle and be creative enough to adjust fire support as necessary.

The FSO must envision how the enemy will use his resources and terrain to his advantage. He also must understand how the task force will do the same. Finally, the TF FSO needs to envision the tactical events that could occur—if the enemy must cross an obstacle, how will he react?

Only by envisioning the battle can the FSO plan fire support to best influence the TF battle. He needs to know maneuver operations and the enemy's doctrine and habits. An FSO who lacks vision is one who plans and executes, for example, preparatory fires that have no bearing on what his task force is doing or where the enemy is.

Many authors have written about the TF FSO as a planner. Yet fire planning is more than targeting—it's creatively managing resources. FSVs, forward observers (FOs), mortars, artillery and CAS are all resources the FSO must manage for the combined arms commander to be able to orchestrate the commander's firepower on the battlefield. For example, during a defensive operation, a good FSO will offset the limitations of the artillery to shift and fire by filling in the gaps with his mortars.

The TF FSO must be an effective leader.

Very few articles discuss the TF FSO as a leader, yet he is as much a leader as a company or battery commander.

The TF FSO supervises the preparation of his fire support section, inspecting each fire support team (FIST), FO party and the fire support element (FSE) to ensure they're prepared for combat. The FSO doesn't dismiss deficiencies as someone else's problems but aggressively ensures the FISTs correct them. As part of his check, a good TF FSO makes sure the company FSOs are performing precombat inspections (PCIs) of their FISTs to ensure the teams are ready. He also ensures they're using the full capabilities of the FSVs to support the TF and company fire support plan. But the FSO's supervision doesn't stop with the fire support section. As the officer in the task force most knowledgeable about fire support systems, the FSO also supervises the mortar platoon—knows the preparation status of his supporting mortars.

A mortar platoon has many of the same gunnery standards as the artillery, and the FSO must hold the platoon to them. He never allows the mortar platoon to practice sloppy gunnery techniques. Far too many firing incidents involving mortars occur at the NTC, incidents a good TF FSO could have prevented. Many incidents were caused by such actions as the mortar platoon fire direction center (FDC) failing to routinely cross-check the firing data for errors before passing it to the mortars.

The TF FSO's job doesn't stop with fire support planning and preparation. He controls fire support to prevent resources from being wasted on low-payoff missions, to maintain the mission focus and to prevent fratricides. To control fire support, the TF FSO positions himself to see the battlefield and assess where the task force needs fire support the most. In coordination with the combined arms commander, the TF FSO is decisive in bringing fires on the enemy. As an executor of the commander's fire support, the FSO isn't a one-man show but manages his FISTs and FOs in their execution of fires. However, when necessary, he quickly takes total control of them to accomplish the mission.

A question many fire support coordinators (FSCOORDs) ask is whether previous experience as a battery commander assures an FSO's success. A former commander, regardless of the type of battery he commanded, usually does better than the TF FSO who hasn't commanded. The reason a former commander is more successful isn't because of the technical skills he has learned, but because of the leadership skills he has acquired.

Troop leading and time and resource management skills are important skills for an FSO. Regardless of how technically qualified an FSO is, he also needs strong troop leading and management skills.

A TF FSO must have command support to be successful.

Last, but not least important, is command support. Without the support of an FSO's chain of command, even the best of FSOs will ultimately fail. The support is critical from both his artillery and his maneuver chains of command. It's the FSO's job to make sure his combined arms commander understands not only what fire support can and can't do for him, but also the complexity of planning for and executing fire support. With this understanding and partnership, the FSO will get the equipment and training resources he needs.

Conclusion

The job of a TF FSO is difficult, at best, and is often unrewarding. Nevertheless, it's a very important assignment. The "how to" mesh all the fire support resources together to support the combined arms fight is unique and not found in any one book.

Experience at the NTC indicates that a thorough understanding of doctrine and detailed knowledge of tactics, techniques and procedures coupled with the human element of soldiering are the hallmarks of a successful TF FSO. For in the end, the success or failure of the mission may rest on the TF FSO.

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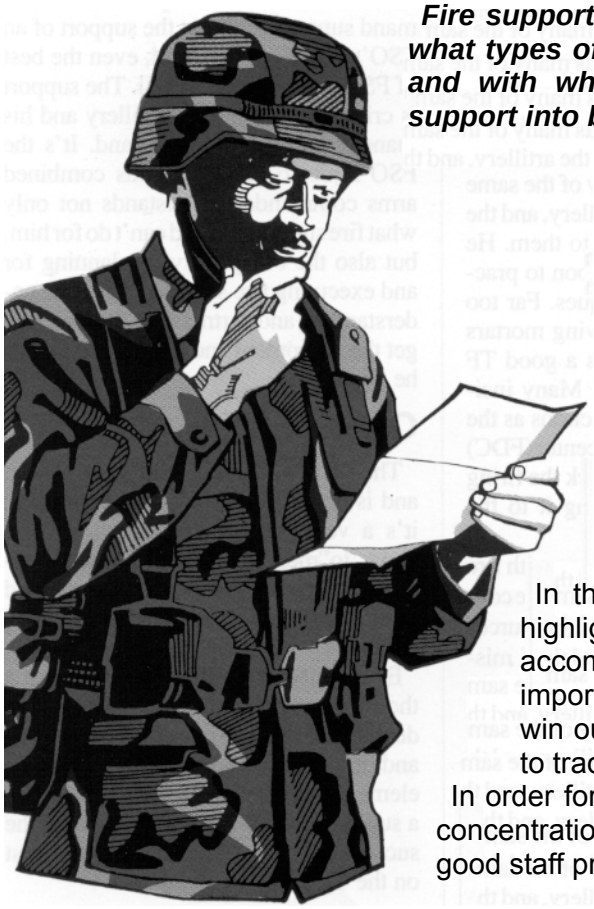
The TF FSO and the Staff Planning Process

by Captain Boyd D. Gaines



Fire support planning…determines how fire support will be used, what types of targets will be attacked, when they will be attacked, and with what means. The goal is to effectively integrate fire support into battle plans to optimize combat power.

FM 6-20-40 Tactics, Techniques and Procedures for Fire Support for Brigade Operations (Heavy)

Much has been written in this magazine in recent years regarding the fire planning process. The current doctrine of top-down fire planning—bottom-up refinement is widely known throughout the artillery community. This concept places a great premium on effective staff planning procedures to produce a workable fire plan for task forces (TFs) and company/teams to execute (and refine as time permits). The ultimate goal of staff planning is to synchronize all battlefield operating systems. This process is truly the battle before the war.

In this article, I focus on the TF staff planning process and highlight the critical tasks the TF fire support officer (FSO) must accomplish to ensure success on the battlefield. The process is important, as the mission of today's heavy forces is to fight and win outnumbered against a mechanized threat. We can't afford to trade TFs for motorized rifle battalion (MRB) equivalents.

In order for the TF to fight and win and minimize friendly casualties, concentration of combat power is key. As discussed in this article, a good staff product allows our forces to concentrate their power.

The Decision-Making Process

Concentration is the massing and synchronizing of overwhelming combat power against an enemy weakness. Concentration is achieved by synchronizing maneuver with combat support.

FM 71-2 The Tank and Mechanized Infantry Battalion Task Force

Synchronization can be achieved when TF FSOs are proactive members of the TF battle staff. FM 6-20-40 describes the decision-making process (Page 2-4) as it applies to maneuver brigades. But this description is too general to be useful to the TF FSO.

A better reference is FM 71-2, Chapter 2. (Note: The "Battalion and Brigade Staff Newsletter," Volume I, published by the Center for Army Lessons Learned, or CALL, Fort Leavenworth, Kansas, this month also has a wealth of information that all FSOs need to know about the decision-making process.) The command and control process described in FM 71-2 is what TF battle staffs use, and TF FSOs must be intimately familiar with it.

The figure shows the eight steps in the FM 71-2's troop-leading procedures (TLP) and how the staff planning process is integrated into them. These steps aren't "locked-step" but are as dynamic and flexible as needed. FM 71-2 states, "...troop-leading procedures can occur in almost any sequence, with several actions taking place simultaneously. Some actions, such as reconnaissance, may begin early and be repeated as often as required."

A hard fact of life is that most fire support assets aren't organic to the TF and are allocated to the TF by the brigade. Failure to develop a plan for integrating these assets dilutes synchronization and, ultimately, could cause the TF to have more friendly casualties. This places a heavy burden on the TF FSO.

The Staff Planning Process

The eight steps in the TLP help the TF FSO meet his responsibilities and the TF integrate all its assets most effectively.

1. Receive the Mission. Fire planning for the TF FSO starts with receipt of a mission. The FSO should go with the TF commander to receive the brigade operations order (OPORD) briefing. If this isn't

1. Receive the mission.
2. Issue the warning order.
3. Make a tentative plan.

a. Estimate the situation.
(1) Conduct a detailed mission analysis.
(2) Develop the situation and courses of action.
- Enemy situation (course of action).
- Terrain and weather (observation, cover and concealment, obstacles, key terrain and avenues of approach, or OCOKA).
- Friendly situation (troops and time available).
- Courses of action (friendly).

(3) Analyze courses of action—wargame them.
(4) Compare courses of action.
(5) Make a decision.

b. Expand the selected course of action into a tentative plan.

METT-T

4. Initiate Movement.
5. Reconnoiter.
6. Complete the plan.
7. Issue the order.
8. Supervise and refine the plan.

Troop-Leading Procedures Integrated with the Planning Process (*FM 71-2*). The process of developing a plan, including the fire support portion, is integrated into these eight troop-leading procedures that incorporate considerations of mission, enemy, terrain, troops and time available (METT-T).

possible, the TF FSO must plan on a lengthy conversation with the brigade FSO via mobile subscriber equipment (MSE) or FM radio. The TF FSO can receive a hard copy of the fire support annex by FAX, the maneuver control system (MCS) or tactical fire direction system (TACFIRE), but he needs it as soon as possible.

The FSO must understand what fires are planned in the TF zone and what fire support assets have been allocated to the TF. For example, assets could include close air support (CAS), brigade combat observation lasing teams (COLTs), Army aviation, priorities of indirect fire, the minutes of artillery smoke and illumination available, the number and type of family of scatterable mines (FASCAM) minefields allocated to the TF, Copperhead priorities, radars operating in the TF zone, the number of battalion volleys of dual-purpose improved conventional munitions (DPICM), the number of targets available for planning, etc.

He also should understand the brigade target attack guidance, including the criteria for attack and engagement, targets designated as high-payoff and any constraints on using fire support during different phases of the battle. The target submission cut-off time and the brigade fire support rehearsal time also should be established. (Note: For a detailed treatment of the brigade's role in this process, see the article "Top-Down Fire Planning" by Lieutenant Colonel Robert D. Sander published in the June 1989 ***Field Artillery.)***

The TF FSO also needs to understand the brigade intent for fire support in detail and how it affects the TF. Additionally, any attachments, such as COLTs, must be verified and "put on the road," if not already. *Critical Task:* The TF FSO should receive the TF attachments, such as COLTs, before he leaves the brigade OPORD briefing.

Needless to say, the brigade already should have taken care of the supply needs (Class I, III and V) of the COLTs and given them an initial mission briefing and brigade graphics.

While the FSO is at the brigade OPORD briefing, his fire support section (FSS) should be receiving standing operating procedure (SOP)-type reports on the status of the fire support teams (FISTs) and the battalion mortars. Without this kind of information, it's hard to figure out who needs ammunition, reconstituting, etc. The FSS also should be working with the TF S2 and developing a fire plan for elements in contact with the enemy or those being sent out early (reconnaissance or counter-reconnaissance efforts). Old fire plans and old geometry in TACFIRE should be deleted.

Finally, the TF FSO shouldn't waste time traveling to and from the brigade command post (CP) where the OPORD was briefed. He needs to use the time to post his map, talk to the TF commander or, if he's in his vehicle, call the TF FSS about the upcoming mission. Every minute of planning time (especially daylight) counts.

2. Issue the Warning Order. In this step, the TF tactical operations center (TOC) issues warning orders to the company/teams and attachments. It's incumbent on the FSO to ensure the mortars receive a specific warning order as well. *Critical Task:* Mortars and company FSOs must be included in the warning order process.

This critical task is often overlooked and results in significant degradation of the mortar platoon's troop-leading procedures. If the task is neglected, the mortars will be out of position, have the wrong ammunition mix to support the TF or have to reconnoiter their positions at night.

For example, the FSO tells the mortar platoon leader (after clearing it with the TF S3), "You need to reconnoiter position areas M1 and M2 [include the center of mass of these areas], azimuth of fire 4800. Be sure you can range the 98 north-south grid line with illumination. Your priority of fire, initially, is to the scouts. Talk to them on their internal net."

The TF FSO also tells each company or team FSO (via FM) as soon as possible what they'll be doing for the next mission. This can be as simple as, "Team Alpha, your team is defending EA [engagement area] Red vic [in the vicinity of] QV 0660 with the mission of destroying 1 MRB. I'm thinking about putting a group of two targets in EA Red. Get with the engineer [and, of course, the team commander] and ensure it's tied into the obstacle plan. Give me an update at the OPORD [briefing]."

This 20-second radio transmission sets in motion a flurry of activity at the company/team level. It allows the company FSO to conduct an intelligent reconnaissance of the EA with his commander. Locations of trigger points and primary and backup observers can be tentatively decided upon. This pays big dividends (especially in the defense) since it allows the company FSOs to formulate how they'll execute the TF fire plan before receiving the TF OPORD.

Critical Task: The TF FSO should issue multiple warning orders to the mortars

and company FSOs as more information becomes available and the mission begins to take shape.

3. Make a Tentative Plan. Once the FSO and commander return to the TOC, the battle staff should already be assembled. The TF S2 briefs the battle staff on his initial intelligence preparation of the battlefield (IPB) of the area of operations. This is important, since the S2's product is the point of departure for all future planning—it "drives the train" for the TF scheme of maneuver.

Given limited or moderate planning time, the TF commander and the battle staff formulate a plan that deals with the enemy's most probable course of action (COA). This concept is the basis for all future staff planning procedures. *Critical Task:* The fire plan must be formulated based on the enemy's most probable COA.

In Step 3, the next procedure is the mission analysis—a time for the FSO to look at what fire support tasks must be accomplished to support the mission. After the mission is restated, the TF commander provides guidance addressing all battlefield operating systems. For the FSO, this results in his forming the initial draft of the intent for fire support.

The [TF] commander must ensure that he clearly states his intent for fire support, that his fire support plan is developed accordingly, that all available fire support is considered, and that each phase of the maneuver plan is supported by the fire plan.

FM 71-2

Formulating the intent for fire support is critical. Without the commander's intent, the FSO is left to his own devices. The result is the FISTs and team commanders aren't given specific tasks to make fire support a combat multiplier.

The intent for fire support should be written within the framework of the brigade intent for fire support and address how fire support is going to influence the battle in the TF zone.

The FSO must work at extracting planning guidance from the commander. The genesis of a weak fire plan is the failure of the FSO to be integrated into the staff planning process.

Critical Tasks: The guidance for fire support must be obtained early and built upon during the staff planning process. It needs to address all fire support assets, special munitions and attack and engagement criteria; specify how, when and where you want to engage the enemy; and incorporate the higher commander's intent.

The next procedure is for the S3 (and probably the S3 Air) to develop the friendly COA. After COAs are briefed by the S3, the battle staff develops estimates that address their respective functional areas. This is where the FSO briefs data in terms of combat power: minutes of smoke available, given that day's weather conditions, and the number of DPICM volleys available that the TF can expect to see at different points in the battle.

The point is, the estimate must be conveyed in meaningful terms that the battle staff can understand and rapidly assimilate. The standard reply, "X Artillery Battalion is direct support to Y Brigade," is not acceptable. The TF FSO also must highlight problems, such as battle losses and artillery Class V issues.

This is the time for the FSO to get with the S4 and work out mortar Class V problems or anticipated needs—prestock; smoke or high explosive (HE) heavy; etc. Waiting until the OPORD is issued to discuss this information will be too late.

Wargaming the COA is the next procedure in Step 3. After the S3 develops the COAs, the FSO, as part of the battle staff, helps compare the COAs and, ultimately, helps recommend one to the commander.

When the commander approves a COA, he and his battle staff participate in a process called "wargaming" the COA. The battle staff and commander mentally fight the battle on the map—from beginning to end. A good wargaming session verifies the roles of each battlefield operating system in the battle. This is a critical task for the FSO because this is where targets literally are "put to acetate." *Critical Task:* The FSO wargames the fire plan with the battle staff to insure it's synchronized with the scheme of maneuver.

During the wargaming, the FSO visualizes what fire support is doing in each particular phase of the battle and what the results are. He fleshes out the observation plan for critical targets with redundancy built in. Target allocations (if any) to subordinate company FSOs are finalized. *Critical Task:* The TF FSO must develop an observation plan for the critical points on the battlefield—redundancy is key.

The TF FSO uses all fire support assets and special munitions available to the TF. He also fills in his execution matrix as the battle unfolds and refines the intent for fires to focus on the "how".

A note of caution: The TF FSO must

remember that most fire support assets are scarce resources so he should not promise to make "grid squares glow".

This process should produce a completed fire plan. Failure to conduct this part of the process properly usually results in a fire plan that doesn't support the TF. The plan won't make the most of the assets available and potentially increases friendly casualties.

As several of the eight steps for the TLP in FM 71-2 are occurring simultaneously, the mortars and FISTs are already moving **(Step 4 Initiated Movement)** and reconnoitering their areas **(Step 5 Reconnoiter).** But the focus of this article is the staff planning process, so the details of these steps are best reserved for other articles.

6. Complete the Plan. A good wargaming session makes Step 6 easy. The TF FSO needs to be aware the plan is never really complete. Most TFs call this the "80 percent solution." To give subordinate company/teams time to properly plan for the operation, the plan is finalized enough to issue an operations order.

7. Issue the Order. The next step includes orders production. This is a critical event, requiring home-station training and preparation. The FSE already should have developed an SOP for who does what during the orders preparation process. Each member of the shift should have a responsibility. Examples include tracing the overlay, inputting the fire plan into TACFIRE, etc.

Frequently, the FSO or fire support NCO (FSNCO) try to do the entire reproduction process by themselves while also trying to do other coordination. The result is an unreadable document that's full of mistakes and published late.

One person in the FSE must be the quality control person who checks the document before it's printed. Preprinted matrices and target list worksheets (stencils or copy machine quality) are effective. Using these preprinted forms and having jobs for everyone ensures the rapid, accurate reproduction of the order. An excellent format for the fires annex is in the article by Major Peter S. Corpac, "Brigade Top-Down Fire Planning and Execution" (August 1989).

Additionally, the TF FSO needs to write out how fire support is going to be used in support of the TF from the line of departure to consolidation on the objective. This "scheme of fires" can be a combination of the intent for fires, observation plan and information from the fire support execution matrix and the concept of the operation. This simple technique pays big dividends at the OPORD briefing. It helps the company FSOs and mortar platoon leader understand what's expected of them.

Another technique is to use a target list worksheet that identifies the event for which each target was planned and assigns execution responsibility (primary and backup). This technique allows the TF FSO to expand the "how" without cluttering up the matrix. Major Corpac's article has an excellent example of a company target list that can be modified for use by a TF FSO.

Note of caution: The best fire plan means nothing if it isn't disseminated to the brigade, direct support battalion and TF in a timely manner. Orders production must be finished before the OPORD.

Another part of Step 7 is the orders briefing. The mortar platoon leader and company FSOs should come to the briefing with their commanders. If this isn't SOP, the commander should make it so; otherwise, it's a waste of valuable time.

The TF FSO should insist company FSOs bring map boards and copy the new graphics and target list before the order is issued so they can listen and better understand the order while it's being briefed. The TF FSO should have one copy of the fire support plan set aside in the FSE for the company FSOs and the mortar platoon leader to pass around and copy.

He also should get updates on equipment and personnel from each team and the mortar platoon—take the time to talk one-on-one with each company FSO and the mortar platoon leader on their portions of the plan. The TF FSO must spend the time explaining to them the "how" of the intent for fires.

During the OPORD briefing, the TF FSO addresses specific versus general target responsibilities. He should encourage questions from the company/team commanders and talk through how fires are going to support the TF and be executed. The TF FSO repeats this information at the TF rehearsal with his company FSOs and the mortar platoon leader explaining their portions of the plan.

8. Supervise and Refine the Plan. This final step in the decision-making process has been covered in detail in other articles published by this journal. But there are a couple of points worth emphasizing. First, the TF FSO must adhere to target submission cutoff times and not fall into the trap of not allowing any refinements after a certain time. The fire support organization supporting the brigade must be flexible enough to allow changes, even if by exception.

Second, generally speaking, in the offense, refinement to the fire plan comes from (in order of priority) the scouts or reconnaissance effort, the TF S2, higher headquarters and company FSOs. In the defense, company FSOs and changes to the scheme of maneuver have priority.

Last, the TF FSO should devote this time to ensuring the plan is executable. In the defense, he visits critical target locations and verifies the observation and communications plan. In the offense, he ensures he has redundant sets of eyes on the battlefield.

Conclusion

Knowledge of doctrine is the cornerstone of effective staff procedures. Trying to circumvent doctrine or seeking shortcuts to the staff planning process greatly increases the risk of producing a poor staff product. Ultimately, the poor product leads to increased casualties on the battlefield. The bottom line is doctrine works.

This article presents techniques that allow a TF FSO to be an effective member of the staff planning process. The result of the staff planning process is a fire plan that's synchronized with the scheme of maneuver. And that, as they say, is half the battle.

Captain (P) Boyd D. Gaines, until recently, was a Task Force Fire Support Officer (TF FSO) Observer/Controller (O/C) at the Combat Maneuver Training Center (CMTC) at Hohenfels, Germany, where he observed 24 rotations of TFs from every division and armored cavalry regiment in the US Army Europe. Currently, he's the Brigade Fire Support Officer O/C at the CMTC. His other FSO and related experience include serving as the 2d Brigade FSO and the Division Artillery Assistant S3 in the 24th Infantry Division (Mechanized), Fort Stewart, Georgia, and as a Troop and the Squadron FSO for the 2d Armored Cavalry Regiment, Germany. Also, Captain Gaines commanded a battery in the 2d Battalion, 35th Field Artillery, 24th Infantry Division.

SLoCTOP:

The FIST-V Crew

by Major Richard T. Lambert II and First Lieutenant Robert R. Jankowski

Established Field Artillery (FA) crew drills are absolutely necessary to ensure ease of occupation for crews and continuous fire support for committed forces. The FA community has procedures for a howitzer crew to occupy a position using the TLASBAPP formula—a mnemonic that stands for trails, lay, aiming reference point, site-to-crest, boresight, azimuth markers, prefire checks and position improvement. But we have no published crew drill for the fire support team vehicle (FIST-V).

The closest thing we have to a published crew drill for the FIST-V is Task Number 06-3-02-1500 in ARTEP 6-115-20-Mission Training Plan, "Provide Fire Support Coordination," Pages 5-31 to 5-33. The task addresses some sub-tasks but gives no priority of work or collective time standard.

The 5th Battalion, 1st Field Artillery, 5th Infantry Division (Mechanized) Artillery, Fort Polk, Louisiana, developed and tested a FIST-V crew drill. Like the howitzer crew's TLASBAPP, we created a FIST-V crew's mnemonic of SLoCTOP, which stands for the six phases of the FIST-V occupation: security, location, communication, targeting head, observation and position improvement. The drill significantly reduces position occupation time, requires the FIST to employ all FIST-V capabilities and has improved our ability to provide accurate, responsive fire support.

The purpose of SLoCTOP is to make the occupation of a position a standard procedure. All FIST-V crew members must know what to do and in what order. Additionally, crew members must cross train in each crew position to ensure manning for 24-hour operations.

In this drill, the four crew positions are driver, radio/telephone operator (RATELO), fire support NCO (FSNCO) and track commander (TC). The fire support officer's (FSO's) preferred position will be in either the TC or FSNCO position, based on experience and preference. This crew drill is applicable to combat observation lasing teams (COLTs) when the RATELO absorbs tasks specified for the FSNCO.

The Crew Drill

Task: Occupy and establish an observation post with a FIST-V.

Conditions: The FIST is conducting combat operations in a tactical environment. Its mission-capable FIST-V was provided survey data and initialized in an assembly area.

Standard: Using the SLoCTOP formula, the FIST will occupy and establish an observation post with a FIST-V. Subtasks will be accomplished in 3 minutes and 30 seconds plus the north-seeking gyrocompass (NSG) alignment time. The time starts when the FSNCO guides the FIST-V into position in the Security Phase and stops when the Observation Phase is completed.

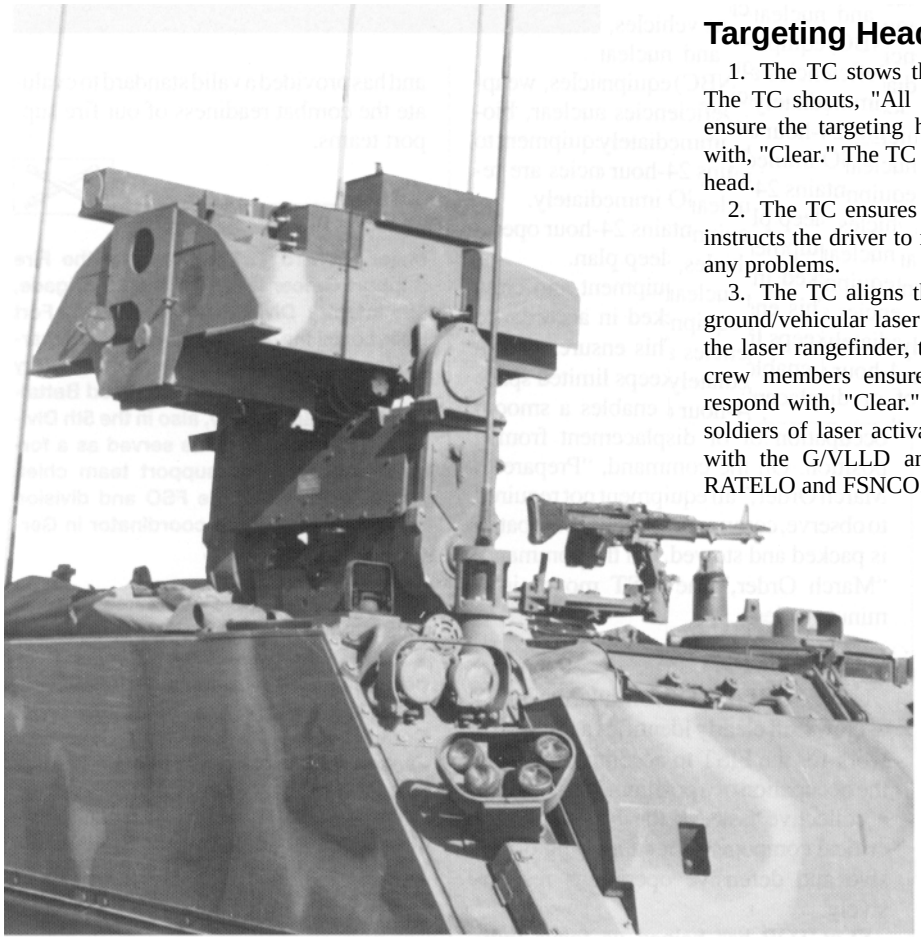
Security Phase

1. The TC directs the FIST-V driver toward a position to observe the battlefield or sector of responsibility. The TC ensures the FIST-V profile is not silhouetted. The FIST-V also must be able to communicate from this position.

2. The RATELO and FSNCO dismount to conduct a security sweep of the immediate area (50 to 75 meters), and the TC provides overwatch with the M-60 machinegun. The dismounted sweep is mission, enemy, terrain, troops and time available (METT-T)-dependent. If the position was recently occupied by friendly forces and the enemy ground threat is low, then a visual sweep by the driver and TC may be all that's necessary.

Before dismounting for the security sweep, the RATELO ensures the TC and driver can monitor all voice nets. The TC must monitor company/team command net, (Co CMD) and maneuver battalion/task force fire support net (Bn FSN).

3. Once the position is secure, the FSNCO guides the FIST-V to the optimum overwatch position. The TC directs the driver to stop when he estimates that only the targeting head is visible to the target area. The FSNCO and RATELO return to the FIST-V, and the RATELO monitors the assigned radio nets.



4. Throughout the Security Phase, the TC and driver must be alert and observe the target area for any ground or air threat (using binoculars). The driver also monitors FIST-V instrument gauges.

Location Phase

1. The TC conducts a six-digit mapspot of his location and passes the grid to the FSNCO and RATELO.

2. The TC puts the observed fire (OF) fan on his map oriented to the target area. He orients on assigned targets, orients the driver to those targets and begins terrain association.

3. The driver continues to observe the target area for any ground and air threat and begins a terrain sketch.

4. The FSNCO updates the fire support situation map, orients the periscope to the target area and supervises the RATELO. The RATELO monitors the radio nets and prepares to transmit the FIST-V location.

Time Standard: The Location Phase time standard is 30 seconds.

Communication Phase

1. The RATELO sends the FIST-V location to the battalion FSO (Bn FSO) by voice on the Bn FSN and digitally on the appropriate direct support FA battalion (DS FA Bn) fire direction (FD) net. He transmits the same message to the task force 4.2-inch mortars on the mortar FD net.

2. The FSNCO supervises the RATELO, updates the situation map and orients the periscope to the target area.

3. The TC, on the Co CMD net, sends a message to the commander that the FIST is in an overwatch position.

4. If the FIST can't communicate, the TC moves the FIST-V a short distance and establishes communications. If this doesn't solve the problem, the FSNCO and RATELO erect the OE-254 or AT-984 antenna. In any case, the FIST doesn't remain in a position where it can't communicate.

5. The TC and driver continue to observe the target area for any ground and air threat.

Time Standard: The Communication Phase time standard is 1 minute. The crew must communicate (by voice or digital) with the fire direction center (FDC) on the DS FA Bn FD net and the 4.2-inch mortar net. It must be able to monitor the Co CMD and Bn FSN nets.

Targeting Head Phase

1. The TC stows the M-60 while the driver closes his hatch. The TC shouts, "All clear?" The FSNCO, driver and RATELO ensure the targeting head is free from obstruction and respond with, "Clear." The TC shouts, "Heads Up," and raises the targeting head.

2. The TC ensures he can see the target area. If necessary, he instructs the driver to move either forward or backward to correct any problems.

3. The TC aligns the NSG (3 to 5 minutes) and activates the ground/vehicular laser locator designator (G/VLLD). Before using the laser rangefinder, the TC announces, "Preparing to Lase." All crew members ensure there are no laser safety violations and respond with, "Clear." The TC then announces, "Lasing," to warn soldiers of laser activation. He verifies his mapspot by resection with the G/VLLD and passes the updated information to the RATELO and FSNCO.

4. The RATELO forwards the corrected observer location (OBCO) to the Bn FSO, DS FA Bn and 4.2-inch mortars. The FSNCO updates the situation map and supervises the RATELO.

5. The driver continues to observe the target area for any ground and air threat. Wearing laser-safe goggles, he views the area through his periscope or reopens the hatch slightly so as not to interfere with the targeting head.

Time Standard: The Targeting Head Phase time standard is the NSG alignment time (3 to 5 minutes) plus 2 minutes.

Observation Phase

1. The TC scans the target area with the 3 x sight.

2. The FSNCO scans the target area with his periscope.

3. The TC, FSNCO and driver verify the location of targets on the battlefield for which they are responsible. The RATELO monitors the radios and reports target identification, as specified by the TC, to the Bn FSO.

4. The driver hands the TC the terrain sketch. The TC uses the G/VLLD to compute azimuth, distance and vertical angle to targets and trigger points and key terrain features. He also records the turret degree indicator of each.

Time Standard: The Observation Phase time standard is 1 minute, running concurrently with the Targeting Head Phase.

Position Improvement

1. The team erects the AT-984 or OE-254 antenna and camouflage nets, if projected to be in position for 30 minutes or more.

2. The TC maintains observation of the target area and completes the terrain sketch.

3. The FSNCO, driver and RATELO rotate through the TC station to become familiar with the target area and to verify the terrain sketch.

4. The team digs foxholes (METT-T dependent). There are two foxholes per track. Each is 5 to 7 meters in front of the FIST-V at 45-degree angles oriented to the enemy dismounted avenue of approach. The laser rangefinder isn't activated when soldiers occupy these foxholes.

5. The TC draws an M-60 machinegun range card. In the defense, the driver, supervised by the FSNCO, dismounts from the M-60 to one of the foxholes and prepares the range card. The team rotates through this foxhole and knows the left and right limits and final protective fire (FPF) assignment.

6. The TC coordinates engineer support to dig-in the FIST-V.

7. The TC coordinates survey support for the FIST-V. The NSG is initialized with updated survey information.

8. The TC boresights the G/VLLD and night sight twice a day at a minimum (twilight and dusk).

9. The FIST maintains vehicles, weapons, communications and nuclear, biological and chemical (NBC) equipment to -10 standards daily. Deficiencies are reported to the Bn FSO immediately.

10. The FIST maintains 24-hour operations by enforcing a sleep plan.

11. The FIST-V equipment and crew baggage must be packed in accordance with the load plan. This ensures equipment accountability, keeps limited space free from clutter and enables a smooth occupation of or displacement from a position. On the command, "Prepare to March Order," all equipment not required to observe, communicate or fight the battle is packed and stowed. On the command, "March Order," the FIST moves in 1 minute or less.

Conclusion

Using the SLoCTOP formula, the FIST-V crew drill clearly identifies a priority of work for the FIST to accomplish during the occupation of a position. It establishes a collective task for the FIST and is a critical component for supporting offensive and defensive operations responsively.

SLoCTOP has helped us focus individual training to support team training and has provided a valid standard to evaluate the combat readiness of our fire support teams.

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First Lieutenant Robert R. Jankowski originated the mnemonic SLoCTOP for the FIST-V Crew Drill. Currently, he's the Fire Support Officer for A Company, 4th Battalion, 6th Infantry in the 5th Infantry Division. Commissioned in 1989, First Lieutenant Jankowski is a graduate of the US Military Academy at West Point.

The authors gratefully acknowledge the help of the fire support NCOs in the 5th Infantry Division (Mechanized) Artillery, without whose input and testing assistance this crew drill could not have been developed.

RIGHT BY PIECE

NOTES FROM UNITS

The Senior Fire Support NCO Conference

Why Keep "Reinventing the Wheel"?

Within the course of a year, the 101st Airborne Division Artillery (Air Assault) reached several milestones—deployment to and combat in the Persian Gulf, numerous field exercises, including a brigade rotation to the Joint Readiness Training Center at Fort Chaffee, Arkansas, and the fielding of the light tactical fire direction system (LTACFIRE). In addition, in the wake of the Gulf War and ongoing defense cuts, the Div Arty has seen a large flux in personnel assignments and reassignments. In order to capture and retain all of the valuable lessons learned during the past year, incorporate the use of newly-fielded equipment, and make this information easily available to incoming fire support personnel, it became necessary to establish a standing operating procedure (SOP) for the division's fire support community. That way, new fire supporters assigned to the Screaming Eagles Div Arty wouldn't have to "reinvent the wheel."

The Standing Operating Procedure

What makes for a good SOP? First, it should include those tried and true methods that develop out of actual experience. Second, it should complement doctrinal procedures with techniques not necessarily mandated by Army policy or suggested in field publications. Third, it should provide the user with good information that he can use to accomplish his mission more efficiently. Finally, the SOP be should be simple to follow and be tailored to the unit's specific mission, equipment, and personnel.

In order to have an SOP meet all of these requirements, it should be written by, or at least derive its content from, the senior noncommissioned officers of the unit. The senior NCO is generally the one soldier in a unit who knows more about how that unit operates than anyone. His expertise reaches across a broad spectrum that ranges from the individual soldier skill level to the senior command and staff level. Having served in the same duty position for several years and often in the same unit, the senior NCO knows from firsthand experience what works and what does not. Most importantly, however, he is the leader who will be charged with enforcing the standards established in the SOP. The senior fire support NCOs (FSNCOs) of the division artillery were therefore selected as the ideal authors of the Div Arty's fire support standards.

Organizing the Conference

Given the Div Arty's fast-paced schedule, there seemed virtually no time for all senior FSNCOs to sit down as a group and work through standardization issues. Then a target of opportunity appeared—the Div Arty senior fire support NCO course. The course is a program of instruction presented regularly to senior FSNCOs to bridge the gap between skills learned at the MOS 13F (Fire Support Specialist) advanced NCO course (ANCOC) and skills being taught to fire support officers at the Field Artillery Officer Advanced Course (FAOAC) at Fort Sill.

Because the majority of the senior FSNCOs had already attended the course the Div Arty presented the previous year, only a refresher of previously covered material was necessary. The rest of the time allotted for the event could be used for discussion of standardization issues. The senior fire support NCO course was transformed from a course of instruction to a fire support conference.

Refresher classes were scheduled to be presented by the most knowledgeable instructors available. For example, US Navy and Marine Corps officers from the 1st Air and Naval Gunfire Liaison Company (ANGLICO), based at Camp Pendleton, California, provided instruction on naval gunfire procedures and capabilities, as well as on naval close air support. The division plans section presented a classified briefing on the division's current operations plans, and the division artillery intelligence officer (S2) provided classes on the intelligence preparation of the battlefield (IPB) process and gave a worldwide threat analysis. Other subjects included fire support in a low-intensity conflict (LIC) environment, mortar employment, use of attack aviation assets, engineer support, US Air Force weapons and capabilities and the use of probable error (PE) tables. The focus of the programmed instruction was to both review doctrinal procedures for employing various fire support tools available and facilitate discussion on those non-doctrinal techniques for coordinating fire support. It was these techniques that were targeted for standardization.

Standardization

Three days of the conference were set aside to discuss general fire support subjects. For example, an area we called "Tools of Artillery Tactics" involved those techniques or procedures that fire supporters use to control fires and safeguard troops, such as fire support coordination measures. The fire support element (FSE) operations discussion described how the FSE is established to best support the maneuver mission, including a discussion of organization and equipment allocation. The fire support planning portion was essentially a review of techniques for fire planning both with and without the LTACFIRE system. Each brigade fire support officer led classroom discussions in the mornings on doctrinal issues which provided background information for the areas to be standardized in the afternoons. In this way, the senior FSNCOs were "primed" to establish standardized procedures.

Certain areas were specifically selected to be standardized, those in which we could establish a bench mark for all fire support sections to meet or exceed. Every standard had to be detailed; even those items to be carried in the forward observer's "rucksack" would be standardized. The intent was not to tie the hands of the senior FSNCO and make his job all the more difficult, but rather to simplify procedures and share information throughout the Div Arty.

Each brigade FSE was tasked to present its own technique or solution to a fire support issue, the merits of which would be discussed by the conference participants. As conflicts arose over particular issues, the participants provided different alternatives and compromises until arriving at a solution that was satisfactory to all. Issues we couldn't agree on were resolved by the Div Arty commander.

The participants of the conference accomplished quite a lot in three days of discussion. They standardized a fire support annex format for use at company, battalion and brigade levels; discussed problems with employing the combat observation lasing team (COLT) within the brigade; simplified checklists for precombat inspections; reconfigured the fire support element of the brigade tactical operations center (TOC), a change that improved the integration of the LTACFIRE system; and standardized those elements of critical fire support information to be displayed at all times within maneuver TOCs. The senior FSNCOs at the conference also discussed the use of voice versus digital radio nets for fire support communications, techniques for fire planning (both manual and automated), and developed a system for naming fire plans that is compatible with the LTACFIRE system, one that identifies the plan by type and establishing headquarters.

The Final Product

Once standardization issues were resolved and approved by commanders and fire support officers, the final task was to compile and package the standards in a single document that was readily available to fire supporters at all levels. A simple SOP was not sufficient, we decided. The standards should be combined with other useful reference material, forming a fire support handbook for Air Assault fire supporters. Certainly other handbooks have been published, and while useful for general reference, they usually contain little information that is specific to the unit's mission, organization and equipment. The air assault division's fire support handbook, for example, would differ from others by containing data on weapons, organizations and employment of all fire support assets in conjunction with air assault operations.

The 101st Airborne Division Artillery (Air Assault) fire support handbook is a compact, weather-resistant document that provides easy reference to such subjects as threat and friendly weapons capabilities, fire support planning and coordination procedures, simplified methods for using the LTACFIRE system, communications information and reference data on the "combat multiplier" organizations of the division, such as engineers, attack aviation, military intelligence and chemical assets. The handbook also provides detailed information on subjects that directly relate to air assault operations.

The 101st Airborne Division Artillery (Air Assault) has taken a step toward refining standards for fire support operations. The fire support team's ability to support the commander's scheme of maneuver is enhanced by "synchronizing" the sharing and processing of critical fire support information. The procedures for accomplishing this must be firmly established well prior to executing the mission. After all, during the heat of battle is the worst time to **"reinvent the wheel."**

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Fighting with Fires:
Employment of MLRS in the Offense

by Lieutenant Colonel Joe G. Taylor, Jr.

The 24th of February 1991 witnessed the culmination of days of artillery raids and weeks of theoretical discussion and practical training as five multiple launch rocket system (MLRS) battalions and six divisional MLRS batteries moved forward in support of the desert offensive. Employing many techniques, those units were extremely successful in providing continuous critical fires in support of a wide range of offensive operations. Little in existing MLRS doctrine supported the employment of rocket artillery in other than a deliberate attack. *TC 6-60 Battery Operations* is noticeably silent about the doctrinal employment of the system in raids, exploitation or pursuit—operations in which the MLRS commander found himself fully committed in Desert Storm. The success of those operations can be attributed directly to the inherent flexibility of the system, its support structure and the professional excellence of leaders and crews.

The purpose of this article is to help fill the void in our doctrinal publications by suggesting an analytical approach which the MLRS commander can use in configuring his battery or battalion to provide responsive fires during offensive operations. I will not attempt to provide a list of "lessons learned" from Desert Storm. Certainly the MLRS's debut in combat will shape employment techniques; however, those techniques and anecdotal lessons should not be the basis of MLRS doctrine. Instead, the doctrine should be based on a disciplined analysis of the mission, the enemy, the desired results and the system's capability. The structure of this process is formed by what I term "offensive imperatives." Different than a mission, enemy, terrain, troops and time available (METT-T) analysis, the imperative process ensures that supporting MLRS units are prepared to accomplish their assigned missions. Before presenting these imperatives, it is helpful to have a common understanding of the MLRS's capabilities and limitations.

MLRS provides the maneuver commander with an extremely lethal and responsive weapon that is employed best in a general support or general support reinforcing role. It is particularly effective against preplanned targets and in attacking stationary targets of opportunity, such as artillery. In its Army tactical missile system (Army TACMS) configuration, with fire direction systems at platoon level, it possesses tremendous employment flexibility. This flexibility is enhanced by MLRS' on-board positioning and lay capability and through the inherent speed and agility provided by

its Bradley chassis. Employment can be improved further through the use of global positioning systems (GPS) to augment the position and azimuth determining system (PADS).

MLRS also has a number of limitations that affect employment. Rocket munitions have only a 30-kilometer range. This limitation is a key consideration in positioning batteries to support offensive operations--particularly so, as we consider the depth over which the attacking force may be arrayed. Communications are a further limitation. Long-range communications are cumbersome and, as Desert Storm demonstrated, at times almost unworkable during long movements to contact and rapid displacement. This is an important consideration in providing corps-level targeting for Army TACMS.

Finally, MLRS requires responsive maintenance and extensive logistical support. Though this is true of every modern mechanized artillery system, it's a difficult challenge for MLRS battalions. General support MLRS battalions have less capability to provide for themselves than their divisional cannon and MLRS battery counterparts due to the MLRS unit's dependence on area support organizations that may not be prepared to support the peculiar requirements of MLRS. Further, MLRS battalions are capable of generating rates of fire that can overwhelm the corps' capability to resupply ammunition.

Each of these limitations requires serious consideration by the fire support planner.

Offensive Imperatives

Recognizing both the strengths and weaknesses of his weapon system, the MLRS commander has a challenging job to prepare his command to support offensive operations. To do so properly, he should employ an analytical process that will result in an organization, formation and logistics fill to ensure the most effective support to maneuver. Additionally, this process requires the MLRS commander to interact with the maneuver commander and his fire support coordinator (FSCOORD) during the planning process. Such interaction is critical due to the lack of experience among both combined arms commanders and their FSCOORDs in employing MLRS, particularly in battalion strength. To quote my first chief of smoke, "They don't know what they don't know." The point is that it's up to the MLRS commander to educate them.

In conjunction with the commander and his FSCOORD, I see the MLRS commander working his way through the eight-step analytical process which follows.

Understand the Mission. If the mission is unclear or misunderstood, launchers will not be positioned or configured to provide fires when required. The MLRS commander must bear in mind that he is involved in a "zero-sum game" as he balances mission requirements for movement speed against the requirement for fires. He must understand when to provide continuous fires, i.e., in a deliberate attack, and when, in the case of exploitation or movement to contact, to concentrate on accompanying the force, his launchers prepared for targets of opportunity. He must be prepared to shift that emphasis during the course of the battle. In Desert Storm, both MLRS battalions and divisional batteries experienced just such a transitional fight as VII Corps shifted from breaching operations to exploitation during the first 24 hours of the ground offensive.

MLRS, with on-board positioning and lay capability, Bradley chassis and platoon fire direction systems offers tremendous employment flexibility.

Understand the Ground. The terrain's potential effect on the advance of MLRS forces needs to be understood fully. Both formal terrain analysis and basic map reconnaissance can provide key information to configure the MLRS unit for offensive operations. For instance, the desert wedge is a direct product of the Desert Storm environment (see Figure 1 on Page 35); an "open order" technique might be required over the more compartmented ground of Central Europe. (See Figure 2 for an example of "open order"; this term is defined later in this article.) Other mobility constraints affect ammunition resupply, air defence and command post site selection. Additionally, a lack of ground cover or terrain relief may preclude the ability to use hide positions. General trafficability will determine positioning of recovery assets. The MLRS commander should capitalize on every advantage the ground offers and adjust his movement techniques accordingly.

Prioritize the Threat. The nature of the probable threat also will help determine both movement and employment techniques. Those threats, primarily air, indirect fire, conventional ground and unconventional ground, must be prioritized and unit actions shaped accordingly. For instance, if a conventional ground threat is deemed most likely, then the MLRS commander should ensure his unit advances over cleared ground and he stays in close proximity to direct fire units capable of providing support and protection. If the threat is primarily from the air or from indirect fire, then he needs to ensure his movement techniques allow adequate dispersion. An unconventional threat may require the employment of close formations and lagers ("circling the wagons"). The commader must decide what the most likely threat is and organize accordingly.

Think Deep. MLRS' tremendous firepower advantage is useless if the enemy cannot be ranged. Batteries must be able to strike those targets against which area fires and dual-purpose improved conventional munitions (DPICM) are most effective. Typical MLRS targets, such as enemy troop and logistics concentrations, soft command and control centers, and artillery will be, by their nature, deep—particularly during the early stages of offensive operations. Preplanned targets, subject to attack as the MLRS force advances to range them, should be struck as early as possible while they're still valid targets. To accomplish this, the MLRS commander must ensure his batteries are positioned to range well beyond the most forward friendly troops. In practical terms, this means MLRS is positioned immediately following the lead brigade or brigades depending on the divisional attack formation.

If the MLRS commander is able to orient his movement and positioning on the direct support or reinforcing cannon battalion, he can maintain an optimum range capability and a reasonable assurance of survival.

Conform to Maneuver. In the same way that the mission must be understood clearly, so should the combined arms commander's intent and concept of the operation. As the fight moves out of relatively fixed battle positions and into the more fluid state characterizing the advance, such understanding is critical to the proper positioning of MLRS. Very quickly the MLRS commander finds he is less focused on using the terrain to his defensive advantage, instead orienting almost exclusively on the maneuver formation. This is not to say that either adjacent unit coordination or terrain management have become unimportant—rather, they have become subordinate to the primary requirement for MLRS to maintain its assigned position within the attacking formation. This formation orientation will persist until the advancing force is halted or until it is committed to another deliberate fight. MLRS units need to be capable of quick transition from one form of battle to the next.

Plan Communications. MLRS is useless if the unit is unable to receive missions due to inadequate communications. This is a particular worry when employing Army TACMS that may require corps-level targeting. Desert Storm clearly indicated that node-based communications are cumbersome and often unworkable during long movements to contact and, as a result, do not support attack of critical targets of opportunity.

Until a technical solution is available, the MLRS commander is dependent on alternate means of communications. When task organized outside his normal command organization, he should press for tactical satellite (TACSAT) capability. He also must be prepared to use any other available command and control nodes, such as nearby airborne command and control centers that can be ranged by his organic FM equipment. Additionally, he should press for fire support coordination planning that incorporates the use of any available AM systems. In short, the MLRS commander must ensure the operational planners are taking every possible communications measure to keep his unit in the battle.

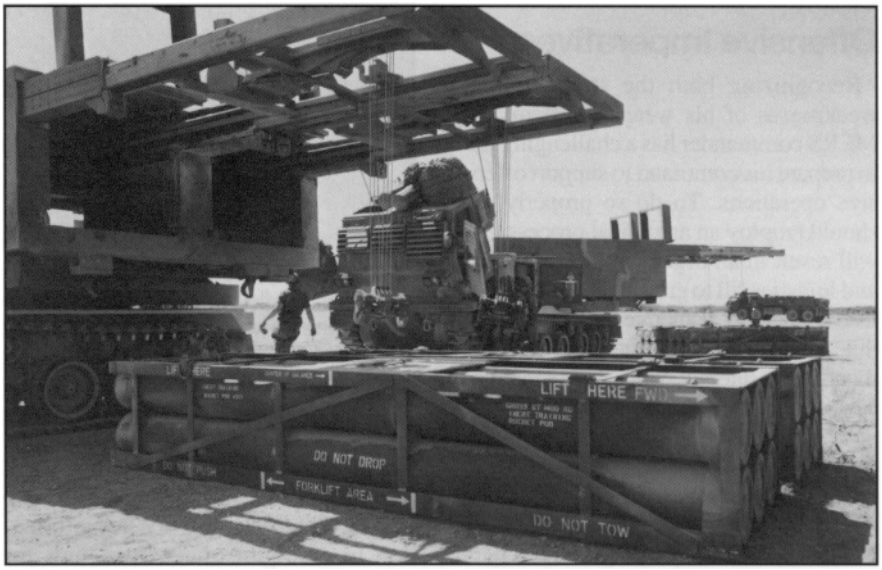
Provide for Resupply. Resupply is an inherent concern in any combat operation. Like communications, however, resupply poses particular challenges to MLRS, especially so during the advance. Fuel and ammunition resupply provide the most difficult hurdles of all. MLRS battalions are dependent on corps assets to push both of these classes of supply well forward. To assist in this effort, the unit commander must plan to cache supplies to support the deliberate fight so he can move forward in the exploitation with full loads. In movement to contact, he relies on the early establishment of corps-level ammunition supply points (ASPs) and the supported division. In any case, he must ensure that both corps and divisional fire and logistics support planners are aware of his unit's particular requirements. He can never assume support will take care of itself.

Provide for Survey. As the offensive operation moves beyond the limited geographic confines of the deliberate attack, survey planning and assets become critical. Several techniques are available to the commander, ranging from using PADS to employing global positioning systems and hasty survey. Any or all of these survey techniques may be employed in the course of an offensive operation. Key to their success is a plan that fully uses all available assets to maintain a portion of the MLRS force with updated launchers to respond on short notice. This allows MLRS to strike high-payoff targets at any time.

Offensive Movement

Once the MLRS commander has completed his analysis of the operation, he is ready to implement those movement techniques that will allow him to accomplish his mission. Currently, MLRS units are best prepared to support the main battle. Platoon leader reconnaissance, advance parties, deliberate occupations and alternating battery and platoon displacements are typical of such operations and current training emphasis. Movement between position areas is usually accomplished in convoy configuration. These deliberate and relatively slow-paced techniques of movement are a direct outgrowth of limitations imposed by training areas and a traditional fixation on defensive operations.

Preparations for Desert Storm soon demonstrated that a more mobile approach was needed to ensure fire support during long movements to contact and exploitation. This realization led to the development of the Desert Wedge (Figure 1). This formation allowed the whole unit to move forward while retaining the flexibility to call out platoons or batteries to deal with targets of opportunity as required. Should a meeting engagement develop, the formation could disperse further into operational areas so as to provide continuous fire support. Additionally, the wedge formation allowed the MLRS commanders to see most of the maneuver formation and visualize the rest.



Resupplying MLRS with ammunition is no small task. MLRS battalions depend on corps assets to push ammunition well forward.

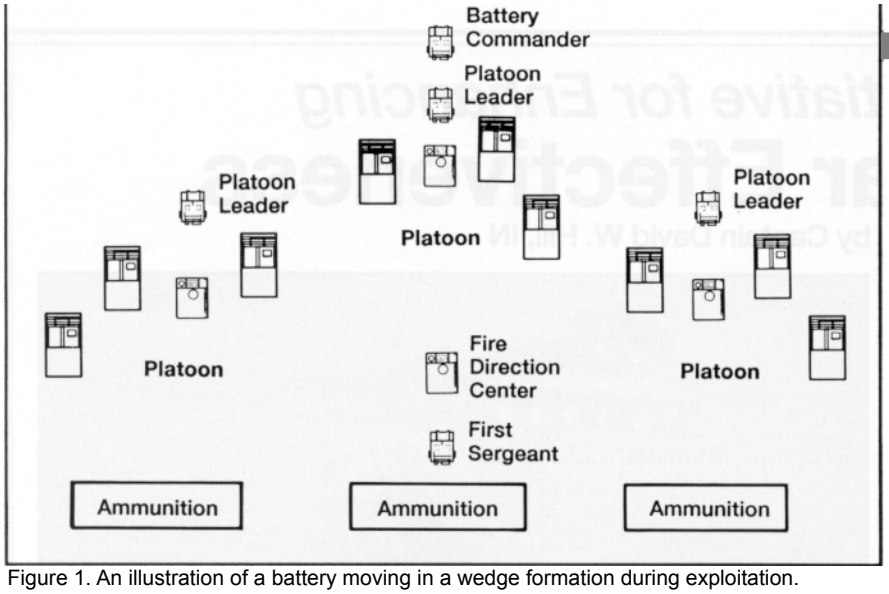


Figure 1. An illustration of a battery moving in a wedge formation during exploitation.

Variations of the wedge were adopted by both cannon and MLRS batteries. Units were prepared to execute the wedge using greater or lesser dispersion based on the enemy's ability to attack through indirect fires. Though an obvious reflection of the desert environment, the formation also represented a fundamental change in philosophy. Traditional fire support planning demanded continuous fires while retaining the capability to displace. The desert offensive, with long movements to contact and exploitation operations, required continuous movement while retaining a capability to provide on-call fires. Desert operations gave birth to the desert wedge as a solution.

Future offensive operations, regardless of the operational environment, also will require tradeoffs between movement and fires. Leapfrogging batteries and platoons in column formations in supporting movement to contact or exploitation over compartmented ground will be no more effective than it was in the desert. Therefore, MLRS units need to develop and practice innovative formations and command and control techniques that support the advance.

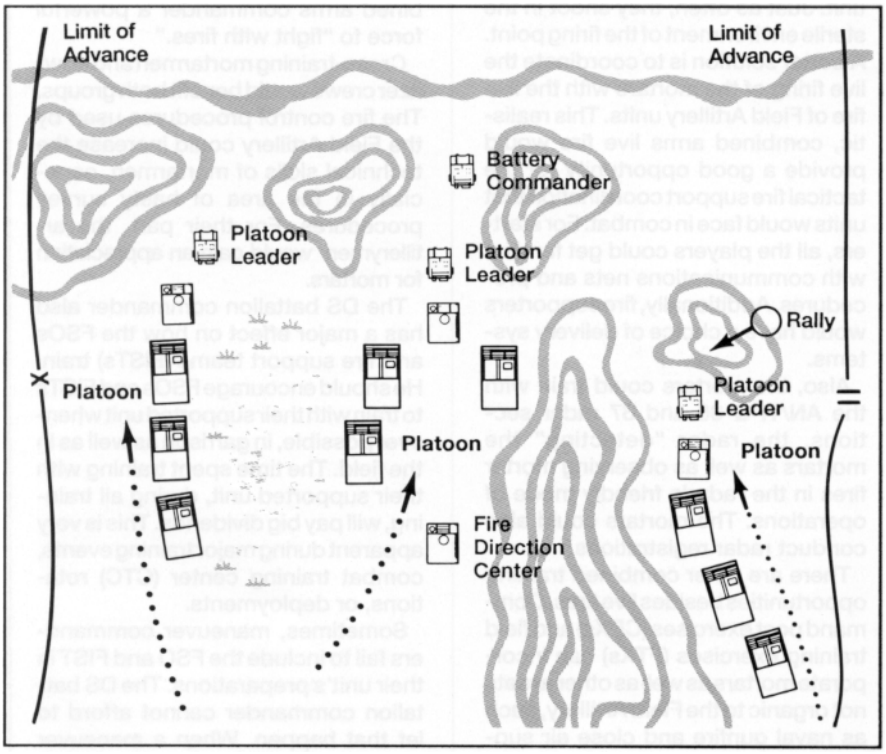


Figure 2. An illustration of a battery moving in open order through compartmented terrain during exploitation.

Figure 2 shows a MLRS battery in open order formation. Similarities to the wedge are obvious. However, the ability to shift around obstacles, use road and trail networks, maintain dispersion and leapfrog, if required, is enhanced greatly. In the wedge, line of sight is key to maintaining formation; however, open order relies more heavily on rally points and limits of advance to ensure movement control. These can be changed or shifted as required. GPS is an extremely useful tool in such circumstances.

Like the wedge, open order allows the battery to maintain a maneuver formation orientation. It also provides for the capability to rapidly employ batteries and platoons against targets of opportunity. Above all, it provides the commander flexibility. Undoubtedly, it also does not represent the only solution to the movement and fires equation.

The use of an operational analysis methodology is the key to the successful configuration of MLRS battalions and batteries to support offensive operations. The eight-step imperative process helps MLRS commanders "get there from here." Prior training in formations such as the wedge and open order will ensure battle drills are already in place to support possible movement requirements. With both fully developed battle skills and a complete operational understanding, MLRS soldiers will assure their system a dominant role on any future battlefield.

Lieutenant Colonel Joe G. Taylor, Jr., commands the 6th Battalion, 27th Field Artillery (MLRS), 75th Field Artillery Brigade at Fort Sill, Oklahoma. During Operations Desert Shield and Desert Storm, he served as the S3 for the 75th Brigade. That unit's support of both deployed corps and five different divisions surfaced many MLRS employment issues. Other recent assignments include serving as the Executive Officer of 3d Battalion 27th Field Artillery (MLRS) and Assistant Fire Support Coordinator (AFSCOORD) with the XVIII Airborne Corps, Fort Bragg, North Carolina.

An Initiative for Enhancing
Mortar Effectiveness

by Captain David W. Hill, IN

Mortars will continue to be less than optimally effective until we take a combined arms approach. The Army does not need to reorganize mortar units, make major changes to current doctrine, or field new systems to make mortars effective. Even if we did, additional resources are not available in our increasingly constrained environment. We can dramatically improve mortar effectiveness using current doctrine and mortar organizations. The solution requires getting the right people involved.

The maneuver commander cannot solve the mortar problem himself--nor can fire supporters. It clearly requires a team effort. This article focuses on the fire support portion of the team. Although the maneuver commander is responsible, the Field Artillerymen who work with him must take the first steps to make mortars a powerful indirect fire force. In this article, I'll speak to two individuals—the direct support (DS) battalion commander and the battalion task force fire support officer.

One Field Artilleryman usually overlooked in the mortar discussion is the commander of the DS Field Artillery battalion. He can have a greater influence on mortar effectiveness than any other fire supporter.

The two hats the DS battalion commander wears make him ideally suited to be the key to mortar effectiveness. As the brigade fire support coordinator (FSCOORD), he is the brigade commander's principal advisor on all indirect fire assets and has ready access to the maneuver battalion commanders. As commander of the DS battalion, he commands the maneuver battalion's fire support officers (FSOs). In short, he commands or supports each element having responsibility for mortars.

The DS battalion commander can most quickly influence the situation by including mortars in FA training. The most important training event for mortars is a live-fire exercise. Often, when mortars live fire, they are "on their own," away from their unit. Just as often, they shoot in the sterile environment of the firing point. A better solution is to coordinate the live firing of the mortars with the live fire of Field Artillery units. This realistic, combined arms live fire would provide a good opportunity for the tactical fire support coordination that units would face in combat. For starters, all the players could get familiar with communications nets and procedures. Additionally, fire supporters would have a choice of delivery systems.

Also, the mortars could train with the AN/TPQ 36 and 37 radar sections, the radar "detecting" the mortars as well as observing mortar fires in the radar's friendly mode of operations. The mortars could also conduct radar registrations.

There are other combined training opportunities besides live fires. Command post exercises (CPXs) and field training exercises (FTXs) can incorporate mortars as well as other assets not organic to the Field Artillery, such as naval gunfire and close air support. Integrating mortars into these exercises will make the indirect fire team more effective, giving the combined arms commander a powerful force to "fight with fires."

Cross-training mortarmen and howitzer crews would benefit both groups. The fire control procedures used by the Field Artillery could increase the technical skills of mortarmen, especially in the area of hasty survey procedures. For their part, the artillerymen would gain an appreciation for mortars.

The DS battalion commander also has a major effect on how the FSOs and fire support teams (FISTs) train. He should encourage FSOs and FISTs to train with their supported unit whenever possible, in garrison as well as in the field. The time spent training with their supported unit, during all training, will pay big dividends. This is very apparent during major training events, combat training center (CTC) rotations, or deployments.

Sometimes, maneuver commanders fail to include the FSO and FIST in their unit's preparations. The DS battalion commander cannot afford to let that happen. When a maneuver unit deploys to the field as a task force, it's too late to establish that

critical relationship between fire supporters and their maneuver counterparts. Fire supporters won't work well with the maneuver unit if they haven't been training with it all along.

One way a DS battalion commander can help is by stabilizing fire supporters in their positions. For example, some DS battalion commanders leave FSOs in place for 18 months or more. The result is a more powerful, more closely knit combined arms team.

But battalion task force fire support officers need to do their part as well. They can improve the mortar situation by implementing some often heard suggestions:

- Understand the commander's intent.
- Ensure mortars get adequate guidance, orders, overlays and target lists—and get them early enough to use them.
- Select targets within the mortar's capability; nail down what you want them to shoot at, when they are to shoot it, and from where they will fire.

Battalion task force FSOs should foster a working relationship with the mortar platoon leader and mortar platoon sergeant. They should work together for positioning and insist the mortar platoon leader get involved in fire planning where possible. They also should aggressively promote fire support and encourage the mortar platoon leader "sell his wares." As a "card-carrying member" of his maneuver battalion, the mortar platoon leader is the FSO's "inside man"—he can promote his mortars' capabilities and limitations better than anyone else. As the senior fire supporter in the task force, the battalion FSO can school the mortar platoon leader on what he can offer to the task force fight. That way, when the battalion task force goes to the field, the mortars won't be forgotten.

The Army is undergoing a radical restructuring based on current world realities and must prepare for contingency operations anywhere in the world. A wide range of possible contingencies mean flexibility is critical. This is especially true in a smaller Army. The mortar is a very flexible weapon and the combined arms commander's only organic indirect fire asset. Mortar effectiveness is a combined arms problem and demands a combined arms solution. Fire supporters can take the initiative.

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Treasure Chest of Logistics Information

Have you ever needed to research a logistics problem, only to ask yourself, "Where do I start? Where can I get facts? Has anyone else ever looked into this problem?"

When you need logistics information, there's no need to "reinvent the wheel." The information you need could be as near as your telephone. The Defense Logistics Studies Information Exchange (DLSIE) exists to provide you logistics research information. The DLSIE, located at the Army Logistics Management College, Fort Lee, Virginia, has more than 85,000 logistics studies, models, management references and related documents in its data base that are available to researchers and action officers throughout the Department of Defense and other government agencies.

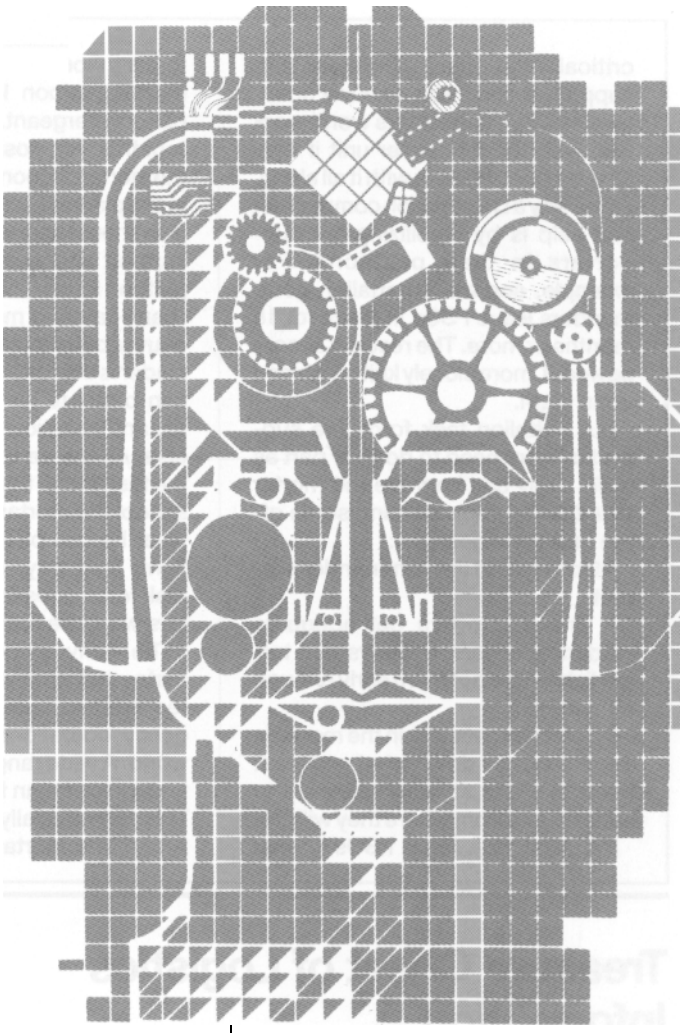
The DLSIE provides access to the information in the data base in several ways. Most frequently, the customer will call **DCTN 687-4546** or commercial **(804) 734-4546** and talk with one of the exchange's analysts during duty hours (0730-1630 Eastern Time). The customer explains to the analyst the area of interest or the problem being researched. The analyst then helps narrow the subject to specific information needs or interests and electronically searches the data base to produce a customized, hard-copy bibliography, listing all documents available that contain information about the subject. The bibliography, which summarizes the information contained in each document referenced, is usually mailed to the customer the next day.

The customer selects from the bibliography the documents wanted, calls the DLSIE microfiche section at **DCTN 687-2240** or commercial **(804) 734-2240** and gives the operator the list of document numbers (LD numbers). The microfiche operator then sends the customer a microfiche containing the documents. It's as simple as that, and you can get the same quick, efficient service.

But, what if you're overseas or in an inconvenient time zone (or just working late into the night)? Simple. Call **DCTN 687-4546** or commercial **(804) 734-4546** and place your request by phone recording. Be prepared to give your name, official mailing address, phone number and a description of the information or the service you need. If you use the recorded message service, jot down the information you need to give and have it in front of you. After you receive brief, recorded instructions, you have three minutes to describe your request; but if there are 15 seconds of silence on the line, the message service will automatically disconnect.

Any way you want to look at it, the exchange is a time-saving, money-saving way to get the logistics information you may need or want for your research or studies. All you need is your dial tone to open this treasure chest of logistics information.

Mens Est Clavis Victoriae
(The Mind is the Key to Victory)



"We must give them the critical qualities of mind and the durable qualities of character which will serve them in circumstances we cannot now even predict."

John W. Gardner
Excellence

by Lieutenant Colonel Mark P. Gay

The US Army's Advanced Military Studies Program (AMSP), now in its ninth year of existence at Fort Leavenworth, Kansas, offers a comprehensive understanding of warfighting at the tactical and operational levels of war to a select group of 52 officers (45 Army, four Air Force, two Marine Corps, one Navy) following their attendance at the Command and General Staff College (CGSC) or its service-school equivalent. Recent graduates were credited with numerous and important contributions to the success of Operations Desert Shield and Desert Storm, and several helped plan General Schwarzkopf's brilliant "Hail Mary" maneuver during ground operations in support of the overall Southwest Asia (SWA) campaign. But most AMSP graduates have quietly plied their trade with little fanfare at every major command headquarters (division and above) throughout the Army for several years.

From its inception, the AMSP has accorded priority to officers of the combat arms; 42 Field Artillerymen have successfully completed the program over the years and have been rewarded with master's degrees and challenging follow-on assignments as corps and division level staff officers (predominantly in the G3 planning arena). Yet, analysis of a recent student roster for academic year (AY) 1992 reveals the names of only three FA students—50 percent fewer in number than in AY 1991 and our branch's lowest student contribution since the school's first "pilot programs" of 1983 and 1984. Contrastingly, there are 16 Infantrymen, ten Armor officers, five Air Defenders, and even six members of the Quartermaster Corps currently in attendance. One cannot help but think that we, collectively as a branch, have missed a very important "wake up call" for our young field-grade officers. As an AMSP graduate, I'd like to tell Field Artillerymen what AMSP is all about and why I think they should attend.

The concept and statement of need for a second year of staff college are not new. Twice in this century the Army implemented two-year programs of study (the Staff College from 1903 through 1916, and the General Staff School from 1928 through 1936) only to see the exigencies of world war force a return to a one-year curriculum. General John J. Pershing, Commander of the American Expeditionary Force in World War I, was known to complain that he simply couldn't get his hands on enough two-year staff college graduates. Those graduates counted among their ranks future general officers such as George Marshall, Fox Conner and Hugh Drum. Perhaps more impressive was the performance of Command and General Staff School (CGSS) graduates during World War II—300 of the 817 second-year attendees attained general officer rank. So, in many ways, the reinstitution of a second year at Leavenworth was a return to what the Army's senior leaders already knew to be a winner.

Historical perspectives aside, I think it important to assess the modern-day relevance of AMSP to the career progression of Field Artillerymen. Perhaps it is best begun by focusing on the program's stated purposes:

- Provide the Army with specially educated officers for command and general staff positions.
- Graduate students who possess:

– A mature professional character and commitment to the service of the nation and Army.

– An advanced understanding of war at the tactical and operational levels and

how principles of combined arms must be adapted to the changing conditions of combat.

– The practical skills required to apply that understanding to the solutions of current and future Army challenges in peace and war.

One may note that AMSP offers no immediate gateway back to the line of metal—though it does guarantee the officer a warfighting assignment, since graduates initially serve an 18 to 24-month internship on a general staff. Indeed, as one critic of the AMSP observed, graduates of the program accrue no particular expertise to assist them during their stints as battalion S3, executive officer or fire support officer. That is, they must still manage collective training programs, master the nuances of secure communications equipment and mobile subscriber equipment (MSE), and occasionally take their lumps for alarming deadline reports on the weekly 2406. One might argue that AMSP robs the promising FA major of valuable time for the jobs that really matter most in the quest for artillery battalion command.

AMSP attendance is not, therefore, a ticket to be punched to curry favor with the assignment officer or board member. Admittedly, it involves yet another year of intense academic effort on the heels of "the best year of your life" at CGSC, and many gunners would "druther" be putting ordnance downrange than plowing through readings of Clausewitz and Sun Tzu on a summer afternoon in Kansas. No one has said it's an easy program of instruction—rumors of lengthy reading assignments and exacting writing requirements are absolutely true, as is the certainty of oral comprehensive examinations prior to graduation. Finally, having run the gauntlet myself, I'll concede that at times it doesn't seem like a whole lot of fun.

What AMSP provides its students in place of gunsmoke is a comprehensive study of warfighting and a breadth and depth of professional perspective that is unmatched even at our senior service colleges. Unlike the first year at CGSC where tactical discussions and exercises tend to be hurried along as a concession to the many non-combat arms officers in attendance, AMSP focuses its entire curriculum on the art and science of deploying, fighting, and sustaining armed forces to accomplish strategic objectives in a theater of war. Knowing the nuts and bolts of one's basic branch is extremely important to the learning process and is an understood prerequisite for selection. However, such knowledge is not sufficient on the officer's part. Students are expected to be masters of their respective branches, so they can concentrate more fully on the tougher issues of combined arms synchronization and techniques for massing combat power through integration of the battlefield operating systems.

In a nutshell, the AMSP Course features three phases. (1) Preparation in CGSC (following notification of selection to AMSP), which consists of two required electives. One elective, "Modern Military Thought," exposes the student to the selected writings of more than 20 distinguished military thinkers. The concepts gleaned prove very helpful later, when distilling the historical studies and doctrinal tenets as precursors to wargame participation. (2) The 49-week resident phase is comprised of separate courses in Theory and Doctrine, Tactical Dynamics, Contemporary and Historical Operational Art and Preparation for War. (3) Subsequent assignment, or internship, which is normally to a corps or division staff, is the final phase.

Additionally, the student takes three trips with his seminar during the second year to reinforce classroom learning. The National Training Center trip, taken in September prior to beginning Tactical Dynamics, allows students to observe evaluated battalions as they fight the opposing force (OPFOR), but also requires them to prepare plans and briefings similar to those enacted by the battalion staff for a particular scenario. In November, students visit several joint and combined headquarters to acquire the regional perspectives of the commanders-in-chief. Later, in May, the staff ride of the Vicksburg Battlefield accords class members the terrain-walk equivalent of an operational campaign that truly achieved strategic results during the American Civil War.

Without doubt, the core of Advanced Military Studies is the student seminar. There students learn not only how to think about war, but also how to defend their own views while assimilating the other good ideas from their classmates.

A word of warning here—each 13-man seminar is comprised of some of the finest and most committed professionals you'll find together in one place. Each was carefully screened prior to his selection by the Commandant, CGSC (meaning I wouldn't have made the cut these days!), and each arrives in the morning well-prepared for his role in seminar discussions or his assigned position for the wargame. The "science of muddling through," closely akin to the "cooperate and graduate" mindset for academic mediocrity, will meet with meager results inside Flynt Gymnasium, where AMSP classes are conducted. Whatever one's aversion to the academic workload, he must understand up front that thorough preparation each day is the price of admission if he wishes to play on a top-notch team.

Forty seminars are devoted to theory and doctrine and address theory of conflict, classical military thought, domains of battle, naval and air operations, theory of operational art, and US Army doctrine. The carefully focused discussion agenda, guided artfully by the seminar leader or one of his two assistants, both stimulates tough thinking about complex issues and illuminates the modern-day relevance of historical and theoretical discussion. Traditionally, guest speakers from the Soviet Army Studies Office have joined the seminar and offered the vantage point of our principal adversary to the seminar's analysis.

My particular favorite was Course 2, Tactical Dynamics. Its emphasis on the analysis of battles and engagements required us to concentrate intensely on how our enemy fights and on how best to employ our own tactical forces to maximize friendly combat power. A marked advantage we enjoyed over the first-year students was the frequent access to terrain boards, where faculty members required us to physically lay down every component of the Soviet tactical formation—*before* we organized Blue forces for combat and arrayed friendly forces to do battle. The appreciation for terrain and difficulties associated with moving and concentrating combat formations made me an infinitely better G3 Planner and Div Arty S3 when the time came. Computer simulations of division- and corps-level battles forced us to view the battlefield in much more depth and breadth than from the perspective of an FA battalion commander and drove home the imperative of sequencing operations (and of synchronizing forces) over time to achieve relative positional advantage over the enemy's forces. Frequent participation by visiting division and corps commanders adds yet another dimension of realism to warfighting discussions.

Courses 3 and 4 build upon the earlier

courses and stretch the student well beyond the comfort zone of his previous tactical experiences. Sixteen seminar periods surround three theater-level exercises during the study of contemporary operational art, and emphasis is placed clearly on joint and combined operations. Expert guest speakers are invited to discuss command and control, naval, air, and marine operations with the students. The exercises are both complex and realistic. On one occasion I was designated the Soviet Front Commander for a week-long exercise, and later I served as Commander of Air Forces for the Baltic Approaches (COMAIRBALTAP) for a NATO-level campaign that involved strategic nuclear employment. Believe me, these were formidable challenges to a junior major whose tactical mastery at that point was limited to firing and target acquisition at the battery level.

To lend historical perspective to the study of operational art, a series of 24 campaign studies are offered. Packaged in three groupings (Pre-World War II, World War II, and Post-World War II), those studies include Napoleon's Ulm/Austerlitz Campaign, Second Manassas, Eastern Front Operations during World War I, North Africa, Normandy, Korea and Vietnam (and, no doubt, Desert Shield and Desert Storm will soon be added). Again, guest speakers prove an integral part of the instruction and assist the AMSP student in bridging the "so what" gap between theory and the operational exercises.

Too much emphasis on history and military theory, you've heard? Unfair—and I'm not an historian. In fact those studies provide the necessary foundation for analyzing present-day doctrinal principles, particularly as they apply to the tactical and operational wargaming simulations that constitute an equally important component of the AMSP learning experience.

The final course, Preparation for War, focuses upon the adaptation of military institutions to changes from within and without. Offered in seminar format (nine sessions) with the assistance of four guest speakers, the course is intended to be both retrospective and futuristic. Topics include force design, doctrinal development, technological change and training. Upon completion, the student is well-armed to do current battle with his immediate opponent—a three- to four-hour oral comprehensive examination administered by a two-member faculty board. Unlike my graduate-school experience at the University of Colorado some years earlier, this examination was anything but a "gimme." Following the examination, students receive a formal faculty critique.

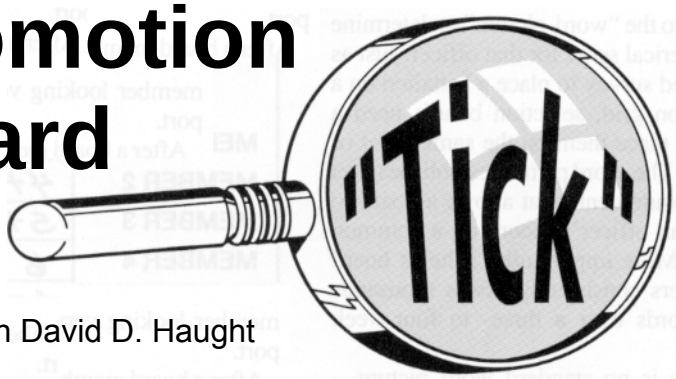
Oh, yeah...I forgot to mention the papers. Each AMSP student is required to produce two course monographs (one per semester) of approximately 40 pages in length. Understandably, the focus of the first paper is tactical, the second operational. (For those of us in the pilot programs who remember the 150-250-page theses required, the monograph approach seems more practical). Additionally, students are expected to formally defend their second monographs during the oral comprehensive examination. Besides offering some very important written thoughts and research on topics of extreme importance to the Army, preparation of the monographs vastly expands the student's knowledge of his topic areas. I seem to recall that my research topic was "The Field Artillery in Support of Deep Offensive Missions," one chapter of which was dedicated to artillery exploitation and pursuit during desert operations. Six years later, I found myself thumbing through a copy in my basement to check the validity of my conclusions in the aftermath of Southwest Asia.

Like students everywhere, the AMSP student is concerned about his follow-on assignment internship, which is made by the Total Army Personnel Command in coordination with the Combined Arms Center, Fort Leavenworth, Kansas. As I pointed out earlier, graduates are normally directed to the general staff at division and corps levels, in keeping with the Chief of Staff's guidance. The objectives of this third phase of AMSP education are to balance theory with practice and to help the graduate apply learned skills. The School of Advanced Military Studies (SAMS) remains in contact with its AMSP graduates during the internship period and keeps them updated with the latest reference materials and doctrinal initiatives. Lest there be some worry that FA officers will become lost in the field-grade swarm around the headquarters building, I can relate from personal experience that both my corps artillery and Div Arty commanders were well aware I was wearing cannons on my BDUs down in the G3 Shop. Those artillerymen who followed me have indicated their experiences were similar.

As to the assertion that AMSP graduates frequently miss out on the good FA jobs for majors, I'll have to take issue. After my assignment in 1985 as G3 Plans Officer (MOS 13A00), I had the good fortune to serve as a cannon battalion S3 and executive officer, Div Arty S3 and battalion commander. I haven't "lost out" on so much after all. Of course each of us is different, and there are no special guarantees for success made to AMSP officers. Professional rewards, I have found, are mostly intrinsic. I'm very proud I completed the program, and I know with certainty that I was a far better battalion commander for having done it. My belief is there are a lot more than three Field Artillery majors out there who can conquer the AMSP challenge and help our Branch to "push the outer envelope."

Lieutenant Colonel Mark P. Gay is currently a student at the US Air Force Air War College. He graduated from the School of Advanced Military Studies in 1985. Previous assignments include serving as Commander, 6th Battalion, 29th Field Artillery, S3 of 2d Battalion, 29th Field Artillery, Div Arty S3 and division G3 Plans Officer, all in the 8th Infantry Division (Mechanized), Germany. Lieutenant Colonel Gay also commanded Battery B, 1st Battalion, 13th Field Artillery and Battery G, 333d Field Artillery (TAB) at Fort Stewart, Georgia.

What Makes a Promotion Board



by Captain David D. Haught

Recently, I had an opportunity to sit on a "mock" selection board held at PERSCOM. It was an enlightening experience, one I'd like to share. But before I tell you the details, I'd like to state my two overwhelming impressions of sitting on the board.

First, I am totally and unequivocally convinced that the key to selection is performance. Your overall manner of performance is critical. It doesn't matter what job you've been assigned, just that you do it well. Second, I believe that the centralized selection process is fair.

Except for the number of records reviewed, my mock board was conducted exactly like a real selection board. We reviewed about 21 records for promotion to lieutenant colonel. The records we reviewed were taken from the last lieutenant colonel board. All names and social security numbers were removed from the records and the faces on the photographs were covered. Using the same procedures and guidelines that the real boards use, our mock board results were worth noting—our results were identical to those of the actual board.

After sitting on the mock board, I felt that officers ought to know more about the system that promotes and selects them for schooling. This article outlines those procedures. By understanding how the Army selects its officers for promotion and schooling, the least you can do is increase your chances of selection.

Board Organization

The Secretariat for Department of the Army (DA) Selection Boards is the agency primarily responsible for conducting boards. Its three-part mission is:

- To be responsible for the conduct of all active component officer centralized selection boards;
- To provide administrative and technical support to DA selection boards;
- And to serve as the sole point of contact for membership for officer and enlisted boards.

On an organization chart, they are subordinate to the Adjutant General Division of PERSCOM. However, they work more closely with the Office of the Deputy Chief of Staff for Personnel (ODCSPER). Centralized boards conducted by the Secretariat include promotion (from chief warrant officer through major general), selective continuation in grade, Command and General Staff Colleges (CGSC), Senior Service Colleges (SSC), lieutenant colonel and colonel level commands, and most recently, Selective Early Retirement (SERB) and Reduction in Force (RIF). The Secretariat typically oversees the conduct of more than 105 boards a year.

Board membership is determined by statutory and Army policy guidelines. Generally speaking, most promotion and school boards have 17 or 18 members divided into two separate panels. Law mandates that a board consist of at least five active duty members, major or above, who are senior to the officers being considered. If there are United States Army Reserve (USAR) officers being considered, there must be a USAR officer on the board. Promotion boards to major and above must have a member currently serving in a joint duty assignment. Beyond the minimal statutory mandates, Army policy requires that every board have minority and female (if there are females being considered) representation and at least one representative of each branch being considered. Promotion boards to lieutenant colonel and above and SSC are required to have an Army Acquisition Corps member. Though not required, the DA Secretariat makes every effort to balance board membership with worldwide representation.

Officers may not volunteer to serve on a board. They are carefully selected for having demonstrated outstanding ability in demanding assignments. Most members are serving or former battalion or brigade commanders. The approving authority for board membership is the Director of Military Personnel Management, ODCSPER.

How Boards Work

Prior to a board's convening, the DCSPER will publish a memorandum of instruction (MOI) to the president of the board. It provides the president of the board with Secretary of the Army guidance, establishes the zones of consideration, provides maximum and minimum selection capabilities and goals, and provides a general concept of the operation. The MOI normally directs the board to examine an officer's potential to perform in the next higher grade considering the entire record, but to place greater emphasis on more recent performance in the officer's career field. The MOI is "close hold" until the results are released and is normally published with the results.

The MOI also outlines "requirements" and "goals." A requirement must be met and is based on specific skill needs of the Army. An example of a requirement would be that X number of officers in Y Branch be selected. Another example would be that X number of officers with Functional Area Y be selected. If, after reviewing all records, a requirement can't be met, the board will use a "skip and bump" methodology until the requirement is met. This means that an officer who is otherwise fully qualified for selection may not be selected in order to make

room for an officer who holds a particular skill. More on this later. A goal, such as those based on equal opportunity of minority and female officers, does not have to be met. No skip and bump is used to attain goals.

Boards review the official photograph, officer record brief (ORB), and performance microfiche for each officer being considered. Letters to the president of the board and hard-copy documents received between the last date for filming material to be put on microfiche and the start date of the board are also seen. Obviously, the most important part of your file is your performance fiche. It is divided into two sections, your officer efficiency reports (OER) and commendatory and disciplinary (C&D) data. Usually one board member will review your C&D data and note any significant items. Unless there is a significant item, remaining board members will go straight to your OERs. All board members review your OERs.

As a board member reviews the OERs, he typically reviews the following in order of importance and time spent—senior rater profile, senior rater comments, rater comments, and duty description. The common (not to be confused with standard) ratings in parts IVa, Vb, and Vd of the OER are all "1s," "always exceeded," and "promote ahead," respectively. Ratings other than these are potential discriminators and will usually result in the board member looking very closely at the report.

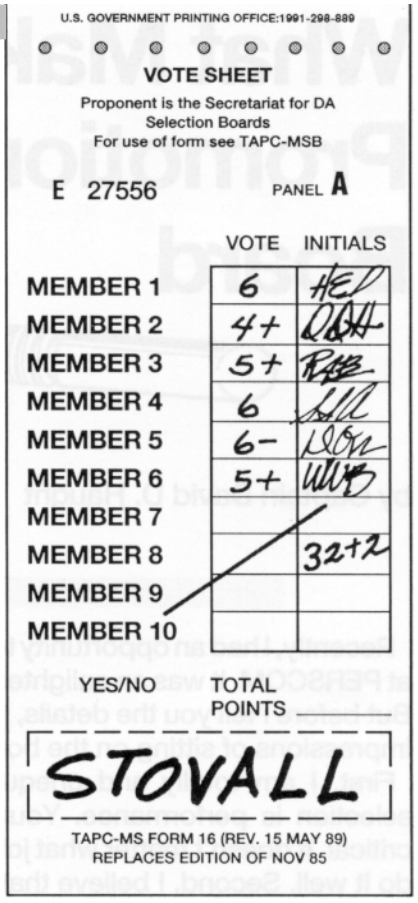
After a board member reviews a file, he refers to the "word-picture" to determine a numerical score for that officer. Just as we need survey to place a battalion on a common grid, selection boards need a tool to place them on the same sheet of music. The word picture establishes a set of measurements that allows a board to score an officer's record on a common basis. More importantly, it helps board members consistently assess thousands of records over a three- to four-week period.

There is no standard word picture—each board develops its own. They range from very complicated ones with much verbiage to very simple ones easy to apply. It all depends on the board's desires. Word pictures normally allow voting on a scale of 1 (low) to 6 (high). Most boards also use a "+/-" system. This allows a board member to "shade" his vote; a 6- is better than a 5+ but not as good as a 6. Once the board develops the word picture, all members use it and it does not change. Below, see the word picture used by the mock board.

Let's assume that board members are identified and are at PERSCOM. They receive several briefings and become thoroughly familiar with the DCSPER MOI. They are ready to review the thousands of files that are eligible for consideration.

6+/-	**Absolutely Yes** Top Few Very Top of the Pack Performed Tough Jobs Exceptionally Well Definite Select	(Promote Now)
5+/-	**Yes - High in the Pack** Clearly Ahead of Contemporaries Performed Tough Jobs Well Must Select	(Definitely Promote)
4+/-	**Solid Performer** Qualified and Responsible Fully Deserves Selection Should Select	(Should Promote)
3+/-	**Shows Potential** Inexperienced Has Not Had the Tough Jobs Will Do Better Next Year Select If There is Room	(Promote If Room)
	Fully Qualified Line	
2+/-	**Not Qualified** Needs More Experience Do Not Select	(Do Not Promote)
1+/-	**Bottom of the Pack** Too Many Weaknesses	(Show Cause)

An example of a word picture.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VOTE SHEET

Proponent is the Secretariat for DA Selection Boards
For use of form see TAPC-MSB

E 27556 PANEL A

	VOTE	INITIALS
MEMBER 1	6	HEL
MEMBER 2	4+	DBH
MEMBER 3	5+	RBB
MEMBER 4	6	
MEMBER 5	6-	
MEMBER 6	5+	
MEMBER 7		
MEMBER 8		32+2
MEMBER 9		
MEMBER 10		

YES/NO TOTAL POINTS

STOVALL

TAPC-MS FORM 16 (REV. 15 MAY 89)
REPLACES EDITION OF NOV 85

Figure 1. An example of a vote sheet.

For the sake of simplicity, assume that the board consists of one panel with six members, that MOI requirements stipulate a maximum of 12 officers can be selected, that a maximum of one below the zone (BZ) can be selected, and that skill requirements mandate that at least three officers with skills A, B, and C be selected. Each board member votes on every officer being considered. The board president (who also represents his branch) votes each officer's file with the same weight as every other member. When voting, the board member determines if he thinks the officer is fully qualified for selection and indicates his score on a blind vote sheet—the vote sheet is designed so no other board member can see another member's vote. When a record has been voted by every member on one panel, the board recorder, a captain assigned to the DA Secretariat, totals the scores. See Figure 1 for an example of a vote sheet.

In determining whether an officer is fully qualified for promotion, the board member must satisfy himself that the officer is qualified professionally and morally, has demonstrated integrity, is physically fit, and is capable of performing

Officer	Skill	Vote Total	OML Number
Brown	A	36-2	1
Jones	A	35+4	2
Allen	C	35	3
Janson	B (BZ)	34+6	4
Smith	C	34+3	5
Hoffman	C	34	6
Shepard	B	34-1	7
Rogers	B	33	8
Stovall	B	32+2	9
Hayes	C	31	10
Black	C	30+4	11
Wilson	B	28	12
Roberts	C	26+3	13
Lewis	A	26	14
Hughes	A	26-2	15
Clark	C	25	16
Vest	B	24-3	17
Coffin	A	23	18
Harvey	A	18	19
	Fully Qualified Line		
Branch	A	11-3	20
Jenkens	A	10-5	21

Figure 2. An example of an initial fully qualified order of merit list (names are fictitious).

Officer	Skill	Vote Total	OML Number
Brown	A	36-2	1
Jones	A	35+4	2
Allen	C	35	3
Janson	B (BZ)	34+6	4
Smith	C	34+3	5
Hoffman	C	34	6
Shepard	B	34-1	7
Rogers	B	33	8
Stovall	B	32+2	9
Hayes	C	31	10
Black	C	30+4	11
Wilson	B	28	12
	Best Qualified Line		
Roberts	C	26+3	13
Lewis	A	26	14
Hughes	A	26-2	15
Clark	C	25	16
Vest	B	24-3	17
Coffin	A	23	18
Harvey	A	18	19
	Fully Qualified Line		
Branch	A	11-3	20
Jenkens	A	10-5	21

Figure 3. An example of a best-qualified order of merit list (names are fictitious).

the duties expected of an officer with his or her qualifications in the next higher grade. Once all records are voted, the DA Secretariat generates an "initial fully-qualified" order of merit list (OML) based on the total score for each officer. See Figure 2 for an example.

The fully qualified line is drawn based on the numerical value from the word picture. In this example, 18 points (score of 3+/- for a qualified performer multiplied by six members) is where the board drew the line.

In most cases, there are more officers fully qualified for selection than can be selected based on the guidance contained in the MOI. Therefore, the board must identify the "best-qualified" officers from among the fully qualified officers. Based on careful consideration of the record of each officer determined to be fully qualified, officers recommended for selection will be determined to be the best qualified through their abilities, length of service, and particular skills to assume the duties of the next higher grade and meet the needs of the Army.

Continuing our example, a best-qualified line is placed in accordance with the guidance in the MOI—in this case 12 officers maximum. So, a best-qualified OML looks like the one in Figure 3.

The board's job is not done yet. Because there are requirements that have to be satisfied, the skip and bump methodology is now employed. Our requirements are to select at least three each of skills A, B, and C. The best-qualified OML has met the requirement for skills B and C but is short one skill A. Therefore, Wilson (the officer with the lowest score of the best-qualified) will fall below the line and Lewis (the officer with the highest best-qualified score with the required skill) is placed above the line. This satisfies the requirement and ensures the best-qualified officers are selected. This procedure is repeated until all requirements can be met. If there are not enough fully qualified officers to meet all requirements, the president of the board must justify this to the DCSPER.

This may appear as though it is strictly a numbers drill. While Army requirements do play a significant role in the process, there is one element that cannot be captured numerically, developed like a word picture, or written on paper like the DCSPER MOI. Officers that sit on boards are just like you and I. They each have had different jobs and experiences. This, in my assessment, ensures the process passes the common-sense test and remains fair.

What You Can Do

There are many things you can do to help yourself get selected. First, start preparing EARLY. Know when you are eligible for a board. Don't wait until a month before the board convenes to start preparing yourself.

Let's start with the photograph. The best suit in your wardrobe should be your "Class A" or Army greens uniform. Your official photograph is your handshake to the board. Board members often review your photograph first—first impressions are lasting impressions. Some common problems with photographs are haircuts or mustaches not in accordance with Army regulation, Inspector General (IG) or General Staff (GS) brass (wear your basic branch brass), temporary unit citations and accoutrements, poorly fitted uniforms, unpressed uniforms, and improperly displayed ribbons, badges, or insignia.

Make sure your photo is current and represents you in the best possible manner. Take a fellow officer with you to the photo lab. Have him look at your appearance before the photographer snaps the shutter. Ask your first sergeant or boss to review the photo before sending it to branch. If you're not pleased with it, take another. The bottom line: ensure you have a good color photograph the next time you are eligible for a board.

Now to the ORB. Continuously update your ORB. ORB updates are a challenge and often take numerous attempts to get straight. SIDPERS is far from perfect. Keep at it. Your PSC/MILPO should help you. If you are not getting service, someone is not doing his job.

When you are reviewing your ORB, concentrate on your date of rank, PULHES (physical profile serial code [numerical]), date of last physical, height, weight, military education level (MEL), civilian education level (CEL), date of last photo, and assignment history. Ensure all information is accurate. Neatly posted changes are fine—in my opinion, changes send a message to the board that you care and took the time to review your ORB. ORBs generated for the specific purpose of a selection board will not have marital data and assignment preferences. You should not provide this information on a selection board ORB. Remember to sign and date the ORB at the bottom.

A comment on the senior rater profiles. We in FA Branch are currently advising senior raters to use a "three-block" profile, where the top block is reserved for the very best officer, the second block is used for the rock-steady performer, and the third block for that officer who should not

FA Branch Assignment Officers, Telephone Numbers and Addresses

COL John N. Paolucci
Colonels Division
Colonels Assignments

LTC(P) Richard E. Evans
Field Artillery
Branch Chief

MAJ(P) Donald W. Browne
Lieutenant Colonel
Assignments

MAJ(P) James H. Gant
CPT(P) Brian T. Camperson
Major Assignments

CPT(P) Donald G. McMillian
CPT(P) David C. Martino
CPT Curtis H. Nutbrown
Captain Assignments:
Company-Grade Qualified

CPT Jonathon A. Bell
Captain Assignments: OAC

CPT Douglas A. Dever
Lieutenant Assignments:
Accessions/OBC

CPT David D. Haught
Future Readiness/
Functional Area Designation/
Professional Development

CW4 Curtis Atkins, Jr.
Warrant Officer Career Manager
Assignments

Fort Sill Representative for OBC/OAC Follow-On Assignments:
MAJ Michael L. McMath
DCTN 639-4511/5206 or
Commercial
(405) 351-4511/5206

Addresses and Telephone Numbers

Lieutenant Colonels (P) and Colonels:

Commander, PERSCOM
ATTN: TAPC-OPC
200 Stovall Street
Alexandria, VA 22332-0412
Telephone:
DCTN 2217862/7863
Commercial (703) 325-7862

Lieutenant Colonels to Lieutenants:

Commander, PERSCOM
ATTN: TAPC-OPE-F
200 Stovall Street
Alexandria, VA 22332-0414
Telephone:
DCTN 221-XXXX
Commercial (703) 325-XXXX
Company Grade 0187/0116
Field Grade 7817/0118

be promoted. If you have questions about your OERs, please do not hesitate to call branch. Assignment officers, telephone numbers and addresses are listed in the chart on this page.

A frequently asked question is. "Should I send a letter to the president of the board?" Correspondence with the board can influence the board in a positive or negative manner. Sending extra copies of documents already on file, unimportant documents or letters with grammatical or spelling errors detract from the time board members spend reviewing a record. In fact, what you send could lower the overall quality of the record. The best use of correspondence to the board is to clarify an issue. A good example I saw was a letter from an eligible officer explaining that his unshaven appearance in his photograph was due to a skin condition—not that he failed to shave. The officer also documented his skin condition with an enclosure from his doctor. If you believe something is important for the board and is not available in your file, send a concise letter. Otherwise, let your record stand on its own merit.

Allow sufficient time to review your microfiche. I recommend you send for your fiche at least three months prior to the day your board convenes. You may request a free copy of your microfiche by submitting a request with your name, rank, SSN, mailing address and signature to: Commander, PERSCOM, ATTN: TAPC-MSR-S, 200 Stovall Street, Alexandria, VA 22332-0444.

I found the experience of sitting on a mock board invaluable. I remain convinced that selection is based on an officer's PERFORMANCE. The system works and is fair. The DA Secretariat conducts about 11 mock boards annually at different installations. If you get the chance, participate. You may want to tell others about it.

Captain David D. Haught is currently assigned as the Future Readiness and Professional Development Officer for Field Artillery Branch, United States Army Total Army Personnel Command in Alexandria, Virginia. His past assignments include serving as a battery commander and battalion fire direction officer in the 3d Battalion, 3d Field Artillery, 2d Armored Division at Fort Hood, Texas; and battalion fire direction officer, battery fire direction officer, and company fire support officer in the 2d Battalion, 27th Field Artillery, 3d Armored Division in Germany. He received his commission through ROTC from Widener University in Chester, Pennsylvania, and Valley Forge Military Academy and Junior College in Wayne, Pennsylvania.

VIEW FROM THE BLOCKHOUSE

FROM THE SCHOOL

North-Seeking Gyro– Teaching an Old Dog a New Trick

Almost from the first fielding of the M981 fire support vehicle (FSV), it has been labeled as slow and unresponsive when relocating from one position to another. Using the current method of operation as described in Technical Manual (TM) 9-2350-266-10, it takes eight to 11 minutes to establish operations after relocating. To improve the FSV responsiveness, the Fire Support and Combined Arms Operations Department (FSCAOD) at the United States Army Field Artillery School (USAFAS), Fort Sill, Oklahoma, developed operational procedures to supplement those described in the TM—cutting the time FSVs can be "on target" by two-thirds.

Background

The north-seeking gyro (NSG) provides two pieces of information to the targeting system control display (TSCD): direction and vertical angle when the target head is erect and vehicle heading when the target head is stowed.

Before this information can be obtained, the targeting station must be initialized and that takes eight to 11 minutes. During that time, the vehicle must remain motionless with as little movement as possible inside. This causes the vehicle and crew to become non-productive until the system is ready for operation. We never escape this initialization process; however, we can select when we do the initialize to minimize excessive delay.

Current procedures indicate we initialize or re-initialize every time we move to a new location. That's not necessarily true. To illustrate this point, let's look into the NSG operation a bit further.

During initialization, the NSG senses the rotation of the earth and compensates for that. Once the compensation is completed, the NSG establishes a true north reference line and converts that to grid north. This is what you read in the TSCD window. It's commonly thought that we have to re-establish this reference line every time we move; however, once the reference line is established, it's tied to the vehicle, *not* the spot on the ground.

To use another example, does your M2 compass give you a false reading every time you move? Of course not. The same principal applies to the NSG. The TM alludes to the fact that the NSG will give the correct vehicle heading while the vehicle is moving (see Page 2-362). So, if the NSG is giving a correct heading while on the move, why doesn't it give an accurate direction when the head is erected after stopping? The answer is that it does, providing you leave the TSCD and NSG power switches on during the move—*and* you follow the procedures outlined in this article.

On Target

To bring the targeting station back on line and to be ready to locate targets accurately in approximately three minutes from the time you stop, you've got to plan for it. Let's say you've already initialized the targeting stations and you expect to move out soon. If the target head is erect, turn off the ground/vehicular laser locator designator (G/VLLD) switch and stow the head. Do not turn off any other switches. Leaving the TSCD and the NSG power switches on is important because shutting off the power to either the TSCD or the NSG results in the loss of the north reference line and you'll have to re-initialize.

The target station operator should complete a map reconnaissance of the next area of operations. He then selects a feature on the map he can identify, one that's within range of his laser. The more sharply defined that feature is the better (building, bridge, etc.). He takes the time to determine the grid and altitude accurately. Eight digits are required. This "feature" will be his known point.

Next, the target station operator announces the known-point grid to the communications (Commo) station operator; then, the target station operator enters this grid into the TSCD using the "Target Grid" key. He enters the "Eastings," "Northings" and "Altitude" and presses the "Enter" key. This creates a known point in the TSCD. Simultaneously, the Commo station operator calls up the "Self-Location" feature of the fire support digital message device (FSDMD). He selects the "Laser One Point" method of that program and enters the Eastings, Northings and Altitude of the known point. Once entered, he must ensure that the curser is in the correct field.

Caution: If any of the required information is omitted, the self-location program will not work.

Now the vehicle is ready to move. It must be emphasized that distance is not the critical factor in a move; time is your enemy. Once the NSG has been initialized, it can be operated for only so long before you have to take action to keep it accurate. Optimum operating time is two to two-and-one-half hours before the NSG should be realigned. During the first hour of operation, the gyro will drift only one or two mils. During the second hour of operation, the gyro will drift about eight mils. In the next hour of operation, the rate of drift will increase rapidly as time passes. This is because the gyro is slowing down. All gyros will drift differently due to the age and number of hours of operation. A total gyro drift of more than 20 mils will make the directions provided by the gyro unreliable for targeting purposes.

When the operator wants to eliminate that drift, he need only stow the target head and select "Realign" on the NSG key and push the "Enter" key on the TSCD. It takes the system about three minutes to strip out the drift. It's a good idea to do this just before a move if the NSG has been on for some period of time.

The move is on. Once the vehicle arrives at its new location, the two operators work together. As soon as the vehicle stops, the target station operator erects the head without delay, locates the preselected known point in the center of the reticle pattern, turns on the G/VLLD and lases the target. While he is doing this, the Commo station operator recalls the "Laser One Point" method of self-location and places the curser in the correct position in that field. The slant range direction and verticle angle to the known point are sent to the FSDMD automatically when the known point is lased. The target station operator presses the "CALC" key once, selects the "CVLAST TGT" and presses the "Enter" key. This allows the TSCD to calculate the current vehicle location (based on the known point that was lased).

Simultaneously, as the Commo station operator sees the range, distance and vertical angle appear in the FSDMD, he presses the "C" key on his FSDMD keyboard. This causes the FSDMD to execute its self-location program and the new vehicle grid appears in that field. When this happens, the FSDMD automatically upgrades all the observer locations in the FSDMD, including the observer location (OBCODE).

Before anything else is done, both operators compare the grids they have produced. This is done to prevent gross errors from entering the system. If the operators are satisfied that the grids are close (no more than a 20-by-20 meter difference), then the target station operator converts the grid produced by the FSDMD to a universal transverse mercator grid and enters it into the TSCD through the "VEH" grid key.

Caution: Don't touch the NSG Key. If you touch that key, it will start the reinitialization process.

The NSG continues to produce an accurate direction to any target. While the target station operator is doing this, the Commo operator transmits the updated OBCODE to the appropriate addressees. The reason the process is done in this manner is that it's easier to change data in the TSCD than it is in the FSDMD.

Now the vehicle is ready to search for targets. This entire process, from the time the vehicle stops to when the target station operator begins to search for targets, can take about three minutes. With crew drill and with practice and cooperation between operators, you can reduce the entire process to about one minute.

Crew Drill

This process works; however, to ensure smooth and continuous operations, the operators need to apply common sense

and diligence in their day-to-day operation of the FSV. To help ensure the FSV remains combat-ready, we encourage crews not to exceed the time limits of the NSG operation. If the NSG is operated longer than two hours, the operator will have to re-initalize rather than just realign the system.

And operators must watch the power supply. There shouldn't be problems when the vehicle engine is running. Operating on the batteries will cause the most problems, perhaps causing the "low battery" light to appear on the TSCD. When this happens, chances are the "NSG Fault" light also will also come on. This means there is not enough power to maintain the initialization grid in the NSG; in other words, you've lost your direction-finding capability. The operator has to shut down the entire system, start the vehicle, run it for a while to recharge the batteries, then start the initialization process all over. Most of this can be avoided by simple maintenance of the batteries. If you watch the battery water and check the cable connections daily, you should be okay. Practice makes perfect. The more you conduct these drills, the better the crew will function as a team.

If you have questions or comments, contact the New Equipment Training Team Branch (NETT), Command and Control Division, FSCAOD, USAFAS, Fort Sill, Oklahoma 73503 or call DCTN 639-4993/5817.

MSG Barry R. Lowthian, FA
C, NETT
FSCAOD, USAFAS

Interim CLASS

The United States Army Field Artillery School, Fort Sill, Oklahoma, is developing a new training device called the closed-loop artillery simulation system (CLASS). CLASS will train and evaluate each node in the Field Artillery gunnery team at the battery level—fire direction centers (FDCs), howitzers and target acquisition. Although CLASS won't replace live-fire training, it will provide a practical alternative. Unfortunately, CLASS is currently conceptual and won't be fielded until FY 97.

The Army is moving to a training aids, devices, simulators and simulations (TADSS)-based training strategy, and the lack of an effective TADSS gunnery trainer until FY 97 creates a training gap. This gap begs for an interim solution, one that captures a method and philosophy of future training but uses the equipment available today. Interim CLASS (I-CLASS) is the solution.

I-CLASS Facilities and Equipment. The training set fire observation (TSFO) facility is the focal point for I-CLASS. In the TSFO, an observer-controller (O/C) selects scenes to accomplish the training objective. The fire support teams (FISTs) remote the radios from their vehicles outside the TSFO facility.

The FDCs are collocated with the howitzers in the motor pool or a local field training site. The training unit sets up normal FM communications from the FDC to the observers. The FDC and howitzers each have an O/C who inspects firing information and reports errors in computations or data fired to a TSFO O/C. The howitzer sections fire "dry" missions, using training aids to simulate fuzes, shells and powder.

When fielded in FY 97, CLASS will train the unit and provide feedback at the end in an after-action review (AAR). It'll be automated to record and evaluate the accuracy and timeliness at each node. Until FY 97, I-CLASS relies on a control cell to evaluate the accuracy and timeliness of procedures performed at each node during training. The control cell is collocated with the TSFO.

The number of O/Cs required for I-CLASS training is determined by the unit commander. If the missions are mostly fire-for-effect (FFE), then the number of howitzer O/Cs could be one per platoon. The full complement of O/Cs indicated in the figure would only be required for platoon or battery certification.

Control Cell	4
TSFO	2
FDC	1 Per
Howitzers	1 Per

I-CLASS O/C Requirements for Platoon or Battery Certification

Training Scenario. The following scenario shows how I-CLASS works during training.

The unit is in a defensive posture during daylight hours. It received the operations order (OPORD), fire support execution matrix and graphics the day before. Battery B is the firing element, and the platoon FDCs have battery computer systems (BCSs). First platoon's orienting station (ORSTA) location was in error by 26.6 meters easting, 31.2 meters northing and 2.3 meters in height. The azimuth to the end of orienting line (EOL) was correct. The platoon O/C reports this survey error to the TSFO O/C. The TSFO operator places the survey error into the computer as offset corrections.

The meteorological data is one hour old. During the training session, the information flows as follows:

(1.) The control cell instructs a TSFO O/C to display the first target.

(2.) The TSFO controller assigns the mission to FIST #1.

(3.) FIST #1 identifies the target and requests an adjust fire mission, based on the commander's target attack guidance.

(4.) Gun section #2 fires the adjustment with a 30-mil deflection error on the first round. The howitzer section O/C detects this error and reports it to the control cell. It relays the information to the TSFO O/C.

(5.) On the second round, FIST #1 requests a Left 100, and the FDC computes a Right 100. The FDC O/C observes this error and reports the information to the control cell. It relays the information to the TSFO O/C.

(6.) After another correction, FIST #1 requests FFE. The observer is accurate but not within mission training plan (MTP) time standards.

(7.) All players conduct a mini-AAR, discuss the errors and continue the training.

(8.) At the end of the training session, all players conduct a final AAR.

Variations. There are a number of ways you can vary or enhance I-CLASS training sessions, including:

- Units can use one platoon to evaluate the other.
- Units with the light tactical fire direction system (LTACFIRE) can use the simulator/simulation monitor analyzer, recorder tester/trainer (SMART) program to generate scenarios, monitor digital traffic and evaluate the training. SMART is a software package for a personal computer that plugs into the LTACFIRE. The program decreases the number of O/Cs required.

• Units can incorporate the Firefinder radar and the battalion operations and intelligence elements into the scenario to exercise the counterfire system.

• Units can add the battalion FDC to provide tactical fire direction.

• Units can invite a maneuver commander and his staff to the training session. The maneuver commander can verbalize a restated unit mission; give his concept of the operation and his intent; issue his guidance on target priorities, desired effects and target damage assessment; or approve the high-payoff target lists and attack guidance.

• FSOs can practice executing defensive and offensive fire plans generated from orders.

• Units can incorporate battalion mortars to exercise mortar FDC and firing sections.

• Units without observers can use observers from divisional units or have O/Cs initiate missions.

Conclusion. I-CLASS provides cannon units a strategy to train the artillery gunnery team using existing equipment. The system trains gunnery skills without expending scarce operating tempo (OPTEMPO) and ammunition resources. Its prime importance is the identification of mistakes and problems before a live-fire exercise.

If units have questions about Interim CLASS, contact the New Systems Division of the Directorate of Training and Doctrine, Field Artillery School, Fort Sill, Oklahoma, at AUTOVON 639-3026 or 5741 or commercial (405) 351-3026 or 5741.

New Systems Division
Directorate of Training and Doctrine
Field Artillery School

Cannon Bore Cleaning--Help is on the Horizon

For several years the Directorate of Combat Developments at the Field Artillery School, Fort Sill, Oklahoma, with help from several FA units (mostly the 1st Battalion, 78th FA), has been testing a new and much improved cannon bore cleaning device.

The focus of the effort is the Azure Blue 2000 Cannon Bore Cleaning Kit (AB 2000 CBCK) which has evolved through numerous name, design and cleaning formula changes since its introduction to the FA community. A few changes were directed by the Environmental Protection Agency, but most changes were suggested by users.

As a result of the testing, the hardware for the system has been reshaped, redesigned and standardized to make it more functional and to ease its integration into tactical units. Wheels and a lightweight aluminum cage were added for safety and mobility. The formula for the multipurpose cleaner was closely scrutinized by the Fort Sill Environmental Protection Agency to ensure safety to personnel and the environment. We are now fielding a device that not only revolutionizes tube cleaning, but also outperforms the current montage of steam cleaners available in the unit motor pools. During the past four years, the AB 2000 has proved its ability to clean engine compartments and vehicle tracks faster and easier than the on-hand steam cleaners. The AB 2000 is cheaper, lighter and much easier to use. It and all components (including a 5-gallon pail of multipurpose cleaner) are about one-third the cost of the Army's latest steam cleaner. Although the AB 2000 does not use hot water, it is a superior degreaser when the Azure Blue cleaning compound is used.

During a showdown test conducted by the TEXCOM Fire Support Test Directorate in December 1990, the AB 2000 demonstrated that two soldiers could clean a cannon bore in 8.5 minutes as compared to the conventional cleaning procedures with seven crew members requiring 20.5 minutes. Using data from the above test, one can conservatively estimate that 108 man-hours can be saved per tube each year.

The AB 2000 is recommended for all FA batteries. This device, if used properly, has the potential to save hundreds of man-hours cleaning equipment in a FA battery. The AB 2000 and components will be listed in the next update of the CTA 50-909 Table 63.

The change will appear in the next revision of the CTA as shown in the chart.

63050n Kit:
Cannon Bore Cleaning Water (see Appendix D)
Per Battery or Company Size Unit Utilizing
Tube Type weapons: ROTC Activity Utilizing
Tube Type weapons WAB Cdr USAROTCCOM...I/-I/I

Components of the above kit will be included in Appendix D, CTA50-909, as follows:

Bore Cleaning Tool
50-ft Pressure Hose
23-ft Pressure Hose
Collapsible Brush
Engine Degreasing Wand
Bore Drying and Oiling Plunger
5-Gallon Pail Engine Degreaser
1 Set Replacement Brushes

The development community and commanders can take great comfort in knowing we are buying a product that will serve our soldiers well. This equipment has been needed for years, and soldiers who have had the opportunity to use it and their chain of command have given the device rave reviews.

Interim Fire Support Automation System (IFSAS)

In August 1991, the Deputy Chief of Staff for Operations and Plans (DCSOPS) and the National Guard Bureau approved fielding an interim fire support automation system (IFSAS) to the National Guard in two years. IFSAS will employ the same hardware to be used in the objective advanced Field Artillery tactical data system (AFATDS). To develop and start fielding a system in two years, we combined software recoding efforts that were already occurring for the battery computer system (BCS) and looked at two potential software builds for a battalion-level command and control system. The IFSAS program ports the current BCS technical fire control software to run on the lightweight computer unit (LCU).

This system will fill the BCS shortfalls in the National Guard and replace the existing AN/GYK-29s. Fielding is projected to start in November 1992. The battalion and above tactical fire control software for IFSAS will be fully compatible with the tactical fire direction system (TACFIRE) and light TACFIRE, will be tested in the AFATDS package 10 Initial Operational Test and Evaluation (February-April 1993) and will be fielded starting in the fourth quarter of FY93. The forward entry device (FED) will provide a complete automated fire control system for the National Guard.

The LCU with BCS software will be fielded to all platoon or battery fire direction centers (FDCs) on one LCU called an AN/GYK-37. Battalion, brigade and division artillery FDCs will receive two LCUs with IFSAS software connected by a local area network (LAN) and called an AN/GYK-38. Each fire support element (FSE), operations and intelligence section (O&I) from battalion to corps levels will get a single LCU with IFSAS software. The FED distribution is one device per forward observer (FO), combat observation/lasing team (COLT), fire support team (FIST), meteorological and survey section and battery commander.

The National Guard can, after fielding IFSAS with common hardware, go to AFATDS five to seven years earlier than currently scheduled by simply changing to AFATDS software on the computers fielded for IFSAS and selectively adding additional hardware. The result will be the National Guard can get the objective AFATDS system fielded before or concurrently with the active Army component.

A similar concept for active forces is also under consideration. The aim of IFSAS for the active forces is to replace battalion TACFIRE and the variable format message entry devices (VFMED) early. A separate program replaces each BCS and AN/GYK-29 with an LCU, AN/GYK-37. This concept will provide both a near-term solution to operational deficiencies and a bridge to AFATDS.

CPT Steven Noll, FA
TSM-FSC[3]
Field Artillery School
Fort Sill, OK

Battlefield Rearm
Where Sustainability is Combat Power

Modern weapon systems are designed to fight and deliver maximum firepower. However, they lack the ability to carry large amounts of munitions on board or to rapidly reload themselves to perform sustained combat operations. Combat units must return to a resupply point to replenish vital supplies to keep them effective fighting forces. Of all these supplies, ammunition is perhaps the most critical, and the task of resupplying this ammunition is becoming ever more complex.

Currently, the world's most lethal main battle tank, the M1A1 Abrams, must be rearmed one round at a time through the top of the turret, while the Army's howitzers must load four separate components—fuze, primer, propellant and projectile—for each artillery round. There's a better way: rapid rearm and resupply. The concept for rapid rearm and resupply requires integrating and optimizing the combat soldier's needs with respect to his weapon and the capabilities of the logistician and his resupply system.

Enhancing this critical element of warfighting, the Project Manager for Ammunition Logistics (PM-AMMOLOG), Picatinny Arsenal, New Jersey, has several advanced technology programs underway to improve weapon system rearm. Several programs in armor, artillery, infantry and aviation will lead the Army into a new era of rapid battlefield rearm. The remainder of this article will address only the artillery initiatives.

Artillery Rearm Module (ARM)

The 155-mm artillery projectiles weigh approximately 100 pounds each and can account for approximately 70 percent of the wartime resupply tonnages. With possible firing rates of 200 to 300 rounds per tube per day, the resulting labor for the artilleryman is monumental. Without automation, the soldier can't work reliably under sustained combat conditions. Furthermore, he must be able to carry out his duties, potentially, within range of indirect, counterbattery fires of conventional munitions and/or in a nuclear, biological, chemical (NBC) environment.

The introduction of the M992 Field Artillery ammunition support vehicle (FAASV) was a step toward resolving these difficulties. Advancing toward full automation of ammunition-loading processes then becomes a logical progression.

Emerging artillery doctrine calls for semi-autonomous operations where ammunition is delivered to a howitzer that's firing and moving to avoid detection and incoming fire. Our resupply concept is to provide large tonnages of multiple pieces of ammunition that are clean and easily prepared for firing and to do so with minimum labor, under armor protection and in the main battle area.

The PM-AMMOLOG has initiated a technology demonstration program for an ARM (Figure 1). The objective is to develop a system capable of receiving projectiles from the ground or a truck bed (Figure 2). Perhaps the system could do even more. We may process ammunition automatically, taking the ammunition from the shipping configuration, installing fuzes, weighing, marking and storing it in automated modules. When interfacing with the howitzer (Figure 3), the system could provide individual rounds by the required type and quantity. The objective is to be capable of rearming the M109 A2/A3 howitzer, the M109A6 Paladin and the advanced Field Artillery system-cannon (AFAS-C).

The major components of the ARM concept are the magazine, rotator unit, transfer conveyor, remote handset and system controller (Figure 4).

The magazine is used to store the ammunition during transport and to move the ammunition to and from the transfer conveyor. The cyclic rate and direction of the magazine is adjustable from the controls on the conveyor control panel or the system

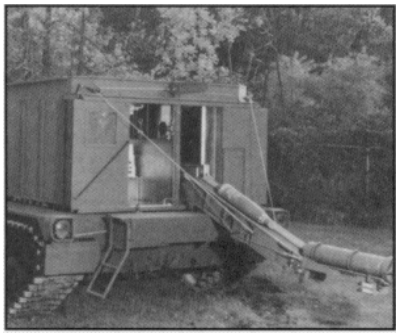


Figure 1. ARM, being developed by PM-AMMOLOG.

controller. The rotator unit is a mechanism that transfers a munition from a vertical position in the magazine to a horizontal position on the transfer conveyor or vice versa. The transfer conveyor is used to transfer ammunition to or from the magazine.

The operator uses the remote handset to select the type and quantity of ammunition to be loaded or unloaded from the ARM. The handset is handheld or attached to the transfer conveyor. The remote handset has a screen that displays the available ammunition types. Finger-touch switches in the display allow the operator to select a type by touching the screen in the area of the menu selection.

Also part of this system is a system controller, attached by cable to the transfer conveyor. The system controller is a microprocessor-based unit that controls the functions of the ARM system to load or unload munitions or to transfer information about the munitions for inventory or logistics purposes.

These initial efforts are to develop a technology demonstrator to prove the concept of automated handling of projectiles under armor protection. Later, the automated handling of advanced propellant (solid or liquid) and the fuzing of individual projectiles will be evaluated. This technology demonstration will contribute to the developmental efforts for the AFAS-C and its associated rearm vehicle, the future armored resupply vehicle-ammunition (FARV-A). Program efforts resulted in an initial user demonstration at Fort Sill, Oklahoma, during FY 91 to demonstrate automated handling of projectiles and today's bag charges in their shipping containers. A follow-on effort for ARM II is currently underway to mature the technologies

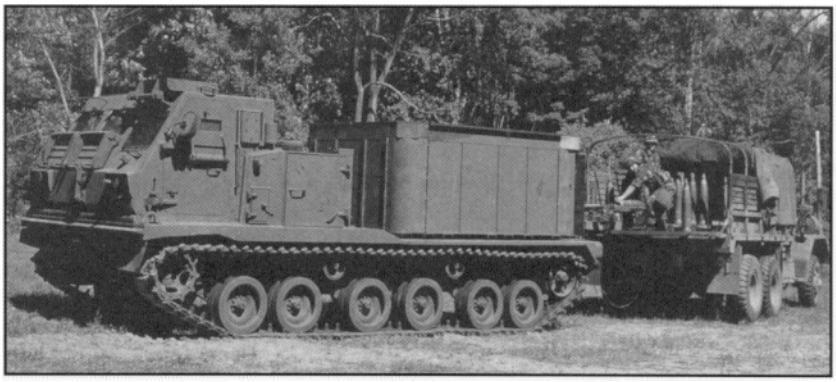


Figure 2. The objective is to develop a system capable of receiving projectiles from the ground or truck bed.

Figure 3. ARM must be able to rearm the M109 A2/A3, Paladin and the AFAS-C.

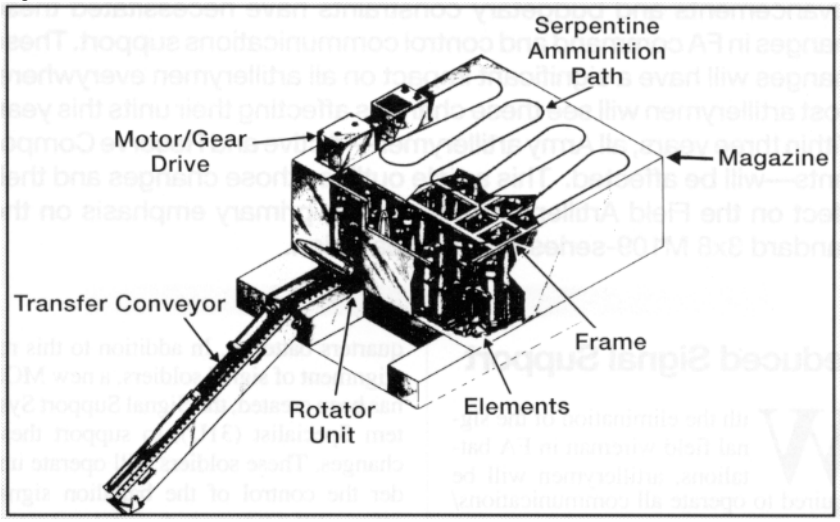


Figure 4. The major components of ARM. Not pictured are the remote handset and the system controller.

that were found promising during ARM I testing.

Summary

Overcoming the technological barriers facing the Army in making battlefield rearm an important component of combat power will not be easy, but the payoffs will be great. Fighting on the battlefield of the future means fighting in an ever increasingly lethal environment. But, with improvements in battlefield rearm, the US soldier will have the ammunition he needs to do his job—provide firepower at the right time and right place on the battlefield. And he'll have a better chance to live to tell about it.

Duane S. Scarborough
Artillery Systems PM
PM-AMMOLOG
Picatinny Arsenal, NJ

Communications For the Field Artillery By the Field Artillery—*The Time is Now*

by Captain Eugene J. Cantrell, SC

Major changes in signal doctrine mean more work, more training and better communications for Field Artillery (FA) units.

Drastic changes are in the offing for FA communications and automation. These fundamental changes include: (1) elimination of combat signalers (unit wiremen); (2) an expanded "user-owned and user-operated" concept for signal systems; (3) establishment of signal systems support specialist military occupational specialty (MOS) 31U and consolidation of unit signal personnel at battalion; and (4) proliferation of new high-tech, sophisticated, general purpose user (GPU) signal systems.

The evolution of AirLand Battle concept, the advent of technological advancements and budgetary constraints have necessitated these changes in FA command and control communications support. These changes will have a significant impact on all artillerymen everywhere. Most artillerymen will see these changes affecting their units this year. Within three years, all Army artillerymen—Active and Reserve Components—will be affected. This article outlines those changes and their effect on the Field Artillery battalions with primary emphasis on the standard 3x8 M109-series howitzer battalion.

Reduced Signal Support

With the elimination of the signal field wireman in FA battalions, artillerymen will be required to operate all communications/automation equipment assigned to the FA unit. Artillerymen will lay all field wire, install all telephones and operate all switchboards as well as all radios. In other words, field wire terminals and devices formerly installed, operated and maintained by signalers now become GPU signal equipment owned and operated by the users, artillerymen. This is most significant in the tactical operations center (TOC) because of the more complicated computer, radio and telephone equipment being fielded.

The second major change for the FA is the move of all signal soldiers from line batteries and service batteries to headquarters batteries. In addition to this realignment of signal soldiers, a new MOS has been created, the Signal Support System Specialist (31U), to support these changes. These soldiers will operate under the control of the battalion signal officer (SIGO) to provide unit-level maintenance support to batteries and assist in training artillerymen to operate their GPU signal systems.

Signal MOS Realignment

For the FA, the adoption of the user-owned and user-operated philosophy for signal equipment, coupled with the elimination in signal MOSs to operate user signal systems, creates significant reductions in an FA unit's signal MOS support elements. Under current Army restructuring, the US Army Signal School, Fort Gordon, Georgia, proposes to eliminate MOSs 31K (Combat Signaler), 31V (Unit-Level Communications Maintainer) and 31G (Tactical Communications Chief) and establish a new MOS, 31U (Signal Support Systems Specialist). In a nutshell, the new 31U specialist will perform unit-level communications troubleshooting and repair, perform frequency modulation (FM) retransmission tasks, assist commanders in training unit personnel on communications skills and advise commanders on the employment of their communications assets in non-signal units, Army-wide.

The unit SIGO and communications chief will also determine support requirements for the batteries. The SIGO will tailor the contact team structure to the operational needs of each battery. The wire and manual switchboard installation, operation and operator maintenance (tasks previously performed by the 31K personnel) now become the GPU tasks of the FA unit soldier.

Currently, FA 3x8 battalions have 43 signal MOS personnel authorized on the table of organization and equipment (TOE)--Figure 1. Under the new TOE (Figure 2), the battalion signal MOS strength will be reduced to 29 signal soldiers (a reduction of 14 signal soldiers). All the signal personnel within the battalion will be assigned to the headquarters battery under the control of the SIGO. Nineteen of these soldiers, the 31Us, will be school-trained for the unit-level (formerly organizational) repair of the GPU communications systems. This communications maintenance support is a significant increase over current TOE strength levels. The increase in trained signal maintainers should eliminate the problem of having too few repairmen in FA battalions. The line batteries will receive all their signal support from the contact teams provided by the SIGO. ***Note:*** *The 31Ls listed in Figure 2 are dedicated to maintaining communications with elements external to the battalion (higher headquarters, supported units, etc.).*

GPU Concept

To help understand the GPU concept, we can draw a parallel between vehicle equipment and signal equipment. The designated operator of a vehicle is responsible for the actual operation of the vehicle as well as operator maintenance. He must add fuel and oil, perform all pre-operational

Current Organization
Field Artillery Battalion, 3 X 8

HHB	3 FA Batteries	Service Battery
1 MSG 31Z50 1 SFC 31G40 7 SGT 31K20 1 SGT 31V20 6 SPC 31K10 10 PFC 31K10 1 PFC 31V10	3 SSG 31G30 3 SGT 31K20 6 SPC 31K120 3 PFC 31K10	1 SPC 31K10
27 Commo Positions	**15 Commo Positions**	**1 Commo Position**

Communications Personnel Total: 43

Future Organization
Field Artillery Battalion, 3 X 8

HHB	3 FA Batteries	Service Battery
1 MSG 31U50 1 SFC 31U40 2 SSG 31U30 7 SGT 31U20 5 CPL 31U10 3 PFC 31U10 1 SSG 31L30 3 SGT 31L20 3 SPC 31L10 3 PFC 31L10		
29 Commo Positions	**0 Commo Position**	**0 Commo Position**

Communications Personnel Total: 29

Figures 1 (top) and 2 (bottom). These figures depict the net effect of changes in signal doctrine on the number of signal personnel in an M109-series, 3 X 8 Field Artillery battalion.

functions, drive the vehicle and complete all preventive maintenance checks and services. Similarly, the designated operator of a GPU signal system is responsible for the installation, operation, maintenance and troubleshooting of that system's items of equipment. Consequently, the user of a field telephone is expected to install the wire for the phones and switchboards, perform all set-up procedures, answer calls, and perform minor maintenance and troubleshooting procedures on the entire field wire system.

Just as our civilian counterpart purchases a sophisticated cellular telephone, facsimile (FAX) machine or personal computer from his favorite local department store without a dedicated operator because of simplicity in operation and affordability, so does the Army. Providing dedicated operators for GPU signal equipment would make those terminal devices unaffordable. With today's shrinking military budgets, the Signal Corps can no longer afford to provide dedicated operators for "user-owned" and "user-operated" signal equipment and systems.

New GPU Signal Systems

Some of the user-owned and user-operated signal equipment to be operated by soldiers in FA units is listed below:

Mobile Subscriber Equipment (MSE). The MSE is the new "area" common-user system (ACUS) replacing the old multichannel system. Artillerymen must install, operate and maintain the MSE telephones (Figure 3), mobile subscriber radio terminals or MSRTs (Figure 4), FAX machines (Figure 5) and remote multiplexer combiners (Figure 6). Although the supporting signal unit provides the long-range transmission path for the systems, artillerymen must install the wire lines to their assigned pieces of ACUS equipment.

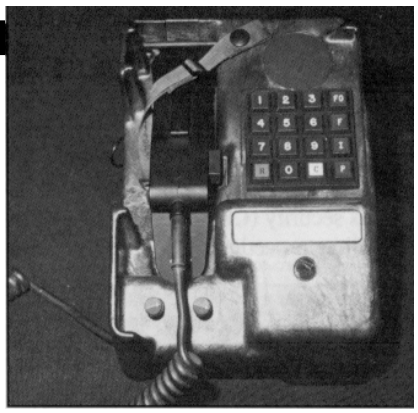


Figure 3. MSE Telephone.

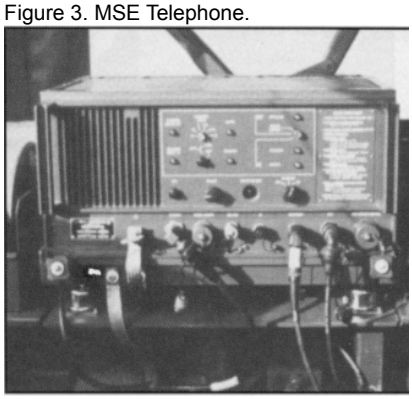


Figure 4. Mobile Subscriber Radio Terminals.

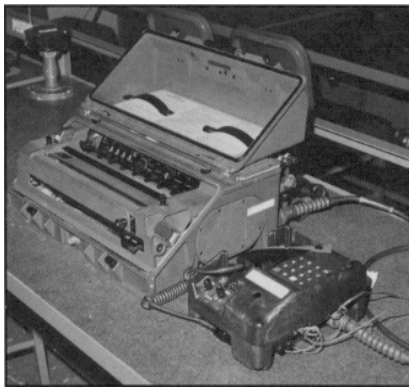


Figure 5. Facsimile Machine.

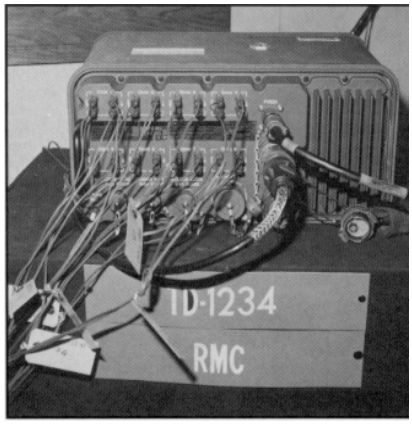


Figure 6. Remote Multiplexer Combiner.

As part of the installation and operation procedures, artillerymen must initialize the MSE terminal devices (telephones, MSRTs, etc.) with specific communications security (COMSEC) codes and affiliation procedures and pre-load message formats and communications protocols to allow the user to prepare, send and receive his own messages for hard-copy record traffic. If procedural errors are made in these steps, the user may be locked out of the system and require the supporting signal unit's assistance in rectifying the problem. Initial entry and constant sustainment training is required to minimize MSE outages.

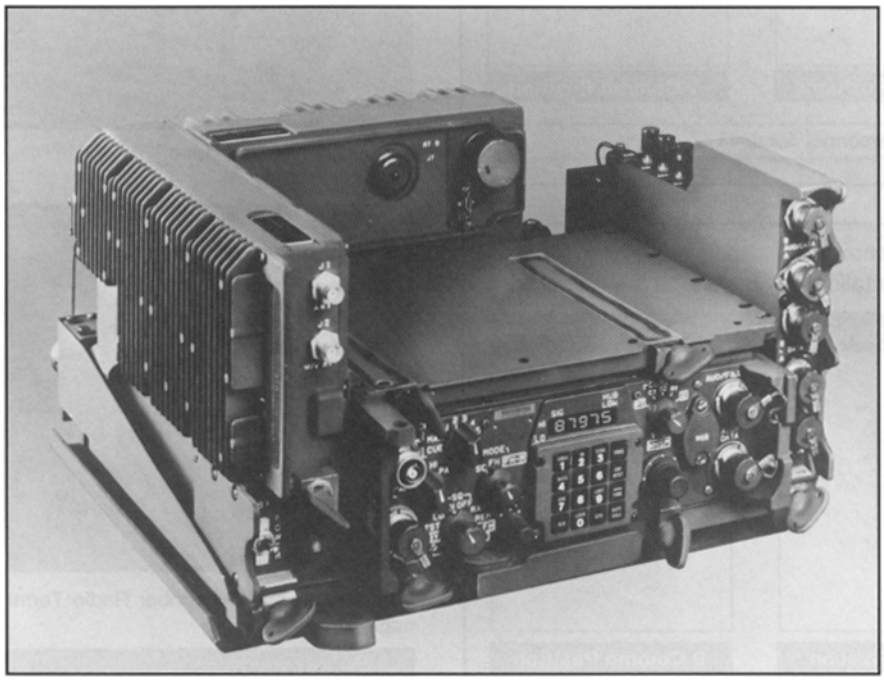


Figure 7. SINCGARS is more complex but also more reliable than its predecessor, the current very high freguency FM family of radios.

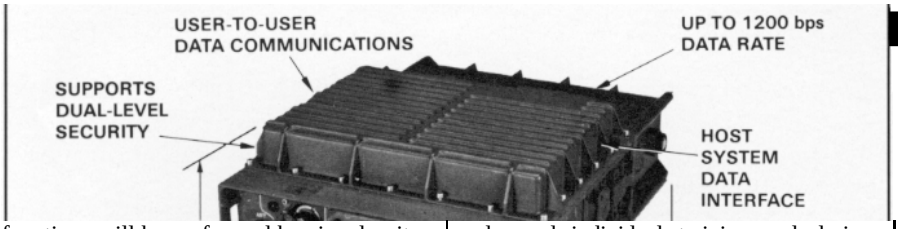
Figure 8. The IHFR, like other GPU equipment, will be operated and maintained by the FA user.

Single-Channel Ground and Airborne Radio System (SINCGARS). The SINCGARS (Figure 7) replaces the current very high frequency FM family of radios. Although these new radios are more complex than their predecessor, they are much more reliable, with thousands of operational hours between failures. But current FM radios require only 16 steps to operate in a secure radio net. If an error is made in one of these steps, the only consequence is that the operator cannot enter the radio net.

The SINCGARS radio requires 27 specific steps to put it into secure operations. For some errors in those steps, the operator may need to start over. On the other hand, some initialization and operational procedure errors can be catastrophic; that is, they can disrupt the operation of the entire net. Keep in mind that, as stated earlier, there will be no signal soldiers *assigned* to firing batteries to help train operators and maintain these radios. SINCGARS is a GPU signal radio system—it is user-owned and- operated. Furthermore, you'll see more of this radio as time goes on. With the fielding of the Paladin, most 155-mm self-propelled howitzers and their resupply vehicles will have SINCGARS radios. (There will still be some M109 series howitzers in service that aren't Paladins.)

Improved High-Frequency Radio (IHFR). The IHFR (Figure 8) will be used for long-haul single-channel high-frequency operations. It has a diversity of uses in both voice and digital requirements. It too is GPU equipment to be operated and maintained by the FA user. Previously, FA units were authorized signal soldiers (MOS 31C) to perform long-haul single-channel communications.

Enhanced Position Location Reporting System (EPLRS). The EPLRS (Figure 9) will be used by artillerymen to transfer large volumes of digital data between various fire support facilities. The artillery soldier will have operator responsibilities for the user terminals. He will be required to connect the automated system (automated FA tactical data system [AFATDS] and maneuver control system [MCS]) to his radio terminal, load the required COMSEC variables and maintain those devices. The net control



functions will be performed by signal units, based on user requirements.

Impact on FA Units

With the transfer of signal operator tasks to the user, the FA is now faced with additional unit training requirements for its GPU signal systems and equipment, to include FM radios (VRC-12 series and SINCGARS), IHFR, MSE telephones, FAX machines, communications terminal and remote multiplexer combiners) as well as emerging data systems like the EPLRS, AFATDS and MCS. Many operator skills for these new systems and equipment are extremely perishable and require extensive training.

Although some of the specialized training will be provided to artillerymen in MOSs 13E (Fire Control Specialist) and 13F (Fire Support Specialist) during their advanced individual training and during other courses, considerable sustainment training must be performed in the unit. The user must receive comprehensive initial training and intense sustainment training to maintain proficiency in these state-of-the-art communications systems. The FA leadership must identify soldiers for this GPU training and ensure they are trained to standard.

Though the GPU concept means more responsibility for Field Artillerymen, it can result in quicker installation of communications and speedier resolution of outages. The creation of the 31U MOS provides artillerymen with a signal soldier capable of performing all required communications and automation tasks as well as assisting in training. The net effect of these two actions is to improve the FA unit communications and, thereby, improve timely FA support to maneuver units.

Conclusion

In *Field Manual 11-50 Combat Communications Within the Division*, the opening statement, "Communications is a vital part of the total combat power of every Army," exemplifies the requirement for continuous, secure, uniform, versatile and simple information systems. The field manual goes on to say, "The success on the battlefield depends on motivated and trained soldiers, good leaders, accurate intelligence, firepower and mobility. The key to unleashing this combat power with the maximum intensity at the proper place and at the critical time is the communications system."

We in the signal community are confident that our communications systems can do the job. GPU equipment can keep the Field Artillery On Time, On Target.

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The OCS point of contact is Major Frank Kolar, Jr., Executive Officer, or Lieutenant Colonel Kevin P. Shea, Commander, 3-11 IN (OCS). Their DSN is 835-4711/4907.