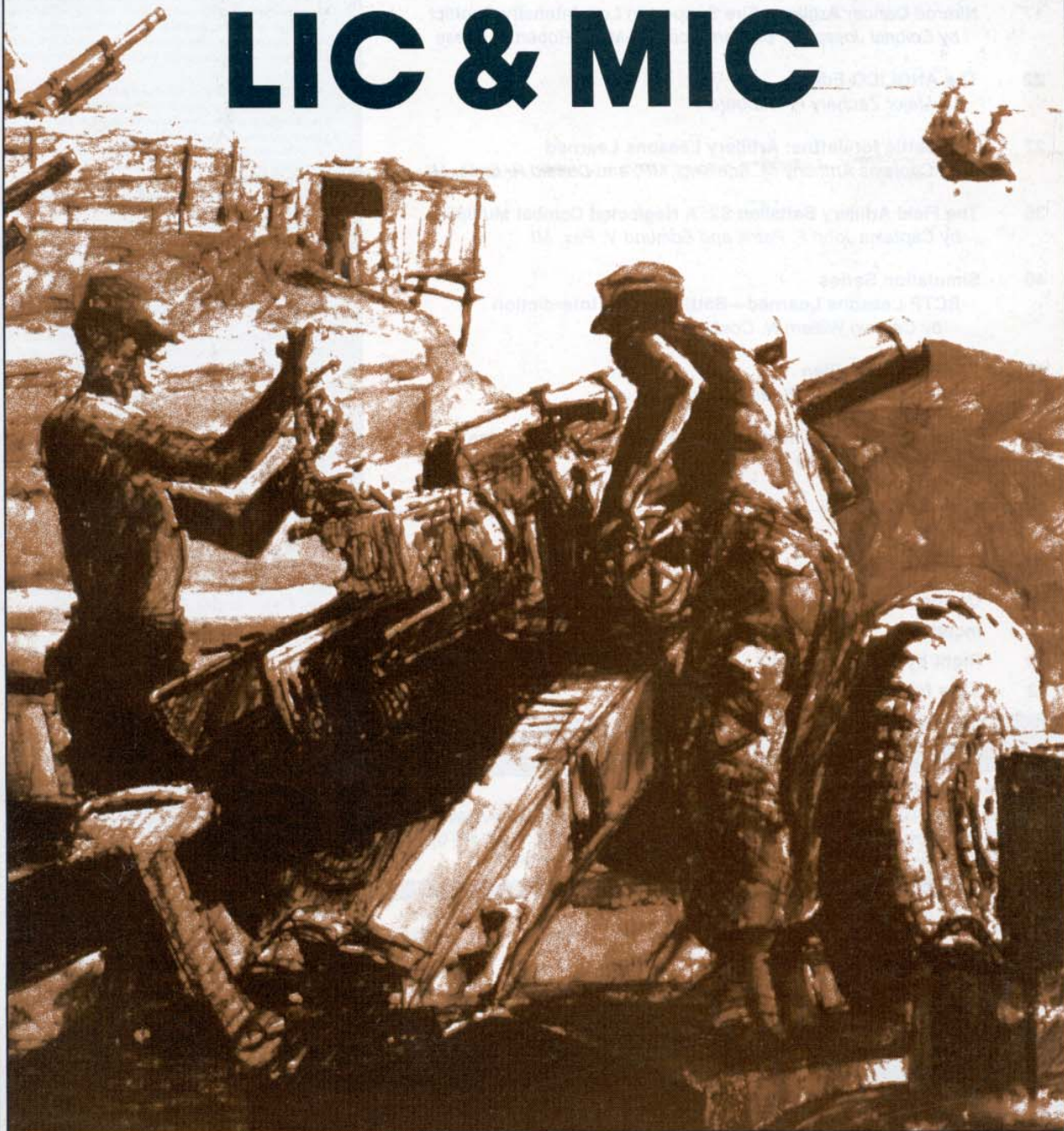


Field Artillery

A Professional Bulletin for Redlegs

April 1990

LIC & MIC





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Publication Date	Theme	Article Deadline
October	Massing Fires	4 June
December	Red Book	6 August

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LIC & MIC—There's Room for Everyone

In a recent commentary in *Army Times*, Marine Corps Brigadier General (Retired) James Hittle, a former Assistant Secretary of the Navy, asserts that the Army is currently "making a grab" for the Marine Corps' traditional expeditionary or contingency-force role in these times of shrinking budgets. Unfortunately, his premise presupposes the Army's role in low-intensity conflict is something new—that there isn't room for two such forces, one that supports maritime contingencies and one that lends itself to low-intensity, rapid-deployment and special-operations land-warfare contingencies. I suppose we should write off Vietnam, Grenada and Panama as flukes.

Press Misled

General Hittle's clearly parochial opinion bothers me only to the extent that his distortions of the relative roles or missions have helped to infect the media. Too many media writers and commentators have accepted (probably through ignorance or simplistic reasoning) that the Army will bear the brunt of the budget cuts because it lost a large share of its mission when the Threat in Europe diminished.

Clearly, refocusing attention on the lower end of the spectrum of conflict to account for changing political and military conditions is not an attempt to "grab" someone else's mission. But we, the Army, have this misperception to kill and some educating to do. Our

civilian decision makers can be led astray by these unfounded assertions just as quickly as the Press has been.

Balanced Approach

We've known for a long time that there would be many new threats to our nation's interests in the decade of the 90s and the 21st century. These threats are due to the proliferation of sophisticated weaponry and the increasing number of nations with the ability to impose their will using this military hardware at the lower end of the spectrum of conflict. The Army would have had to shift to a more balanced approach to force structure and increase the proportion of training for conflicts of lower intensity, even if nothing had changed in the Warsaw Pact.

And who's to say we've lost the charter to fight a mid-intensity war if called upon to do so? Our politicians and budgeteers can put all their eggs in the Gorbachev basket if they choose to, but given the rate of change in the Soviet Union, who would care to predict the outcomes of the disintegration of the Soviet Empire? Historically, such turbulent times have been the times when wars start and escalate.

And who would suggest that Europe is the only theater in which a conflict could rapidly escalate to the mid-intensity level? Fewer and fewer of our military strategists still think we can afford to distinguish between low- and mid-intensity conflict in the first place. And they base this conclusion principally on the technological factors

that make *any* kind of war fairly intense these days. Can we afford to send our light soldiers into a battle where they could be overwhelmed by an unexpected barrage of high-tech, indirect-fire area weapons systems, for example?

Can we afford to emasculate the heavy component of our force structure just because the Bear is no longer breathing down our necks? Are political and budgetary expediencies more important than national security? Just perhaps, our Army ought to stay ready (as it always has) to meet any of the full range of challenges to the nation's interests worldwide.

Credible Deterrence

In this edition of *Field Artillery*, you'll find cogent articles that illuminate low- to mid-intensity missions of both Army and Marine Corps Field Artillerymen. We hope these offerings help inform you further so you can educate those who don't understand that our Army and Marine Corps always will have their varied and important missions to accomplish—regardless of political circumstances.

Maintaining forces with the credibility to act as a deterrent in any contingency is, after all, the foremost role of our Armed Forces. For our nation, we're still the most important game in town. And there's room for everyone.

Editor

On the Move

MAJOR GENERAL RAPHAEL J. HALLADA

Facing the Winds of Change

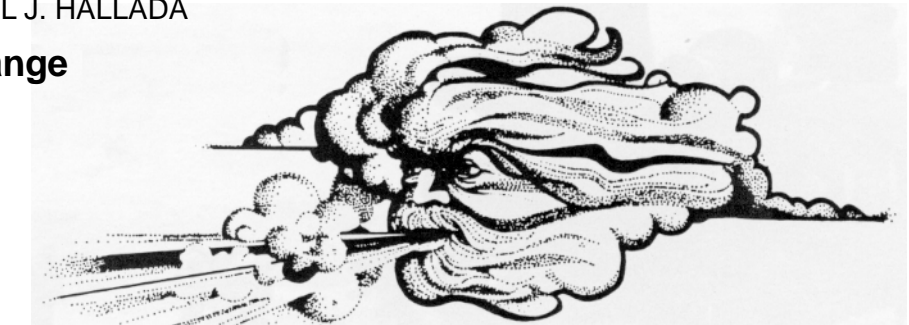
Winds of change are blowing around our world. Many seem to carry messages of new hope, while others are swirling—their eventual direction as yet unapparent. History has shown that the turmoil of change can give rise to discord that, in turn, can kindle a war. The winds of change can fan a spark to a flame and the flame to a raging wildfire.

The probability of a large-scale European war appears to be diminishing rapidly. As we cautiously relax our 40-year vigil in central Europe, we're finding we can shift our focus or, perhaps more accurately, expand our field of view. In that expanded frame, we can readily see there are many other threats, both existing and emerging, that more than make up for our one great but apparently fading adversary. This situation is not new, but we've been preoccupied with an overwhelming threat elsewhere—justifiably so.

Threats Revisited

We can't predict the who, where and when of the next situation that may compel our involvement, though the nightly news certainly suggests some possibilities. The roles we could be called on to fill are diverse and cover the spectrum from peacekeeping operations to "full-up wars." The actual and potential hot spots are numerous, especially in the Third World. And the Old World is in the throes of political and nationalistic turbulence that could conceivably lead to regional conflict.

There are many potential players on the international field, many with weapons and technology equal to our own (in some cases, they are in fact ours). Today some "underdeveloped" countries have tank armies, high-performance aircraft and ballistic missiles. As we survey our complex world with its host of difficulties and potential threats, it's easy to imagine ourselves longing for the days of a



single, preoccupying enemy and familiar, well-rehearsed scenarios.

Our Army leadership always has been aware of the many challenges we face as the nation's strategic, globally deployable land force. For this reason, our Army is designed with a mix of forces: heavy, light and special operations. With the flexibility provided by this balanced mix, we can tailor combat packages to meet any contingency.

Field Artillery Flexibility

The role of the Field Artillery remains vitally important in our worldwide contingencies, though fire supporters have great challenges to face in the complex and dynamic low- to mid-intensity conflict environments. The social-political sensitivities surrounding most smaller conflicts dictate we use our tremendous firepower judiciously and give paramount importance to avoiding noncombatant casualties and unnecessary destruction of property. Where military objectives are not clear-cut, commander's intent and guidance also may be necessarily vague. Discipline is crucial; we must clearly understand the rules of engagement and unerringly adhere to restrictive fire measures.

Fire supporters undoubtedly will find fire planning extremely challenging and responsiveness hampered by all the above considerations.

Meanwhile, the need for rapid, accurate fires remains as critical as in any other combat situation. A firm grounding in fire support principles, together with an understanding of the tools available and a little ingenuity, will prove to be of great value in providing needed support to our forces or those friendly to us. Considerations include the best use of target acquisition

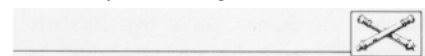
assets, careful selection of appropriate munition types and volumes and selection of fire support means other than Field Artillery, when appropriate (such as mortars, air or electronic warfare).

It's a "given" that our doctrine for fire support in low- to mid-intensity conflicts will continue to evolve. We've learned a great deal in the past few years from experiences at the National Training Center, Fort Irwin, California, and the Joint Readiness Training Center, Fort Chaffee, Arkansas, and we're poring over the lessons our forces are bringing back from Panama. We can resurrect many lessons from Army and Marine experiences in the latter half of this century, most certainly including those from Vietnam.

Redleg Strengths

Though the threats are many and varied, the doctrine continually evolving and the tactics and techniques often situationally dependent, certain basics remain for success—regardless of the region or mission. First, we must have tough training to an enforced standard—from individual soldier tasks through crew drills to battery collective training and beyond. Quality training lays the foundation for success in all else we do.

We also need strong, competent innovative leaders who provide and insist on tough training, inspire and motivate soldiers and know their business. These basics are traditional strengths of the Field Artillery, strengths we must, more than ever, continue to develop and maintain as we face this era of uncertainty and change.



Incoming

LETTERS TO THE EDITOR

The Honduran Field Artillery

I would like to take this opportunity to inform your readers about the role of the Artillery in the Army of Honduras. Your magazine unites artillerymen around the world in the spirit of brotherhood, while providing us the time-honored values of responsibility and duty to our nations and the people we serve.

Although relatively new, having been established just 20 years ago, the Artillery of the Army of Honduras is integrated into the land-force operations of the infantry, armored cavalry, signal and combat engineers. Throughout our brief history, we have dedicated ourselves to excelling in combined-arms training for us to be a potent force in defense of our nation.

Organization

As currently organized, Honduras has one artillery brigade with five field battalions, including our air defense battalion. The first battalion was formed in 1970. Since then, four additional units have been fielded. The Artillery Brigade Headquarters was activated this year to provide command and control for our five battalions.

The size and organization of Honduran Field Artillery battalions is roughly comparable to those of the

United States. A unique aspect of our weaponry is the fielding of the 160-mm mortar in our Third and Fourth Battalions. This provides a measure of flexibility while enhancing our capability in our very mountainous country. In the future, we expect to augment the Brigade with two strategic Reserve Field Artillery battalions and a target acquisition battalion.

Mission

In addition to providing fire support for the ground-gaining arms, our Field Artillery battalions have the mission of providing ground security along our borders with Nicaragua and El Salvador. We not only have the distinction of operating as the "King of Battle," but also as the "Queen of Battle" too. As you might imagine, this dual focus is challenging and gives us a better appreciation for the skills and qualifications of our brothers in arms, the Infantry. Further, we conduct successful civic action programs to combat the continued threat of terrorism and insurgency in areas where our battalions are located.

Training

Honduran artillerymen are very proud of their training institution. We have

developed a comprehensive training program that is specifically designed to support our organization and capabilities. The Artillery Brigade Headquarters is responsible for developing doctrine and organizational training programs to meet our mission requirements.

Our artillerymen participate in courses that include Forward Observation and Fire Direction Courses, Artillery Officer Basic and Advanced Courses and our Battery Commander's Course. Our basic artillery courses have all been standardized. Our classroom and field training is enhanced by recurring opportunities to participate in joint and combined exercises planned with our Allies, principally the United States.

Conclusion

We are developing our capabilities and are fortunate to have the support of the Honduran government and the Commander-in-Chief of our Armed Forces. We are peace-loving men, but we are prepared to confront the destiny that [the security of] our country may demand.

Tiente Coronel de Artilleria
Don Jorge Alberto Arguello Moncada
Intelligence Officer
201st Artillery Brigade
Republic of Honduras

FOs in Mechanized Infantry Companies

I read with a great deal of interest the conclusions drawn about mechanized infantry company observers in the article "Close Support Study Group IV" by Major (Retired) Edward J. Stiles in the December 1989 *Field Artillery*. [The Study Group suggested the possibility of eliminating forward observers (FOs) from mechanized infantry companies and adding a four-man combat observation lasing team (COLT) to each company.] I've been a 13F for five years and a company FSNCO [fire support NCO] for the last three.

I would like to comment on the

Study Group's conclusions about mechanized infantry FOs in light of my experience. The FIST [fire support team] organization has been the subject of considerable debate even within my own FIST. We have often asked the same question: do we really need platoon FOs? I think there is still a place for three two-man FO teams in each mechanized infantry company.

FIST Effectiveness

The article stated that mechanized infantry FOs "have limited effectiveness." The question I have is:

why are FO teams of limited effectiveness? What caused the Study Group to draw this conclusion? What analytical models did it use, and what did practical experience indicate?

I would contend that whatever problems the mechanized company FOs have are not because the position is inherently ineffective. We have problems because most FOs are improperly handled. Most mechanized infantry company FSOs I have observed have been unable to properly handle the FOs assigned to them. They are either unable to properly coordinate and control FOs who are

sending redundant or unimportant missions, which disperse instead of mass fires, or [the FSOs] attempt to perform the duties of the FOs.

The company FSO is first and foremost a coordinator of fire support and shouldn't become totally absorbed in conducting fire missions. Every mission possible should be assigned to an FO to execute. The FO is the primary shooter.

This lesson has been relearned at the NTC [National Training Center, Fort Irwin, California] several times during the past four or five years. Every planned target is a mission. It should not be planned unless there is every intention of firing it. The planning must be based on solid intelligence data. Every planned target should be assigned to an FO to observe and execute.

It is beyond the capability of a four-man FIST headquarters to coordinate fire support for the commander (its primary function), process fire missions from three platoon leaders, observe and execute task-force assigned targets and communicate with higher artillery elements for massing of fires. I don't think armor FISTs that must operate this way do it very well, either. FO teams are in the position to observe and shoot and are the best means of accomplishing observed fire procedures, especially for targets of opportunity.

The most important reason to keep FO teams is because the platoon leader is too busy to perform both the functions of the maneuver leader and FO. Anybody who thinks otherwise should try it. I did and it is *very* difficult.

My FIST was the OPFOR [opposing force] against one of our maneuver platoons. I was the squad leader. We had seven men, a machinegun and two "vipers," all equipped with MILES [multiple integrated laser engagement system]. The infantry platoon was equipped with MILES and had its own FO team.

During the course of the battle, I was allowed to fire one notional 81-mm fire mission. I was so busy during the "battle" that I never had time to complete the fire mission. If

there had been an FO, all I would have had to do was give him the mission.

Another problem is that the platoon leader may not have the time or facilities to operate the digital devices we are fielding to make artillery and mortars more responsive. It is ridiculous to expect an overloaded platoon leader to meet the ARTEP [Army training and evaluation program] standards for the DMD [digital message device]. Relaying a mission over the radio through a company FSE [fire support element] does not speed up the process.



Another reason for any ineffectiveness is that most FSOs do not properly prepare their FOs by thoroughly briefing them on the commander's intent, fire support plan, enemy situation and scheme of maneuver. Company-level fire support rehearsals are rarely held, and targets are not assigned to FOs. Due to the rapid pace of the battle, this leaves the FO little time to react. The FO then gets behind the decision cycle and fire support cannot mass fires at the critical time and place.

I have noticed that most FIST-level training is too technical and does not emphasize tactical training. Tactical training conducted during maneuvers is usually unstructured and team AARs [after-action reviews] are rarely held; this type of training usually yields little benefit. Thorough training and proper pre-battle preparation is the key to timely fire support. Properly prepared FOs should enable us to be proactive and provide fire support as the battle unfolds and not afterward.

Yet another difficulty is that the Bradley was not built with provisions for the FO. It does not provide the same visibility as the M113. I have also noticed that because of the notional nature of artillery during NTC exercises and its lack of visible effects, most infantry platoons prefer not to make the accommodations they can for the FO. Preventing this is a constant battle for the FSO or FSNCO.

COLTs Versus FOs

The article suggested that COLTs be formed and that FO teams be formed from it "as required." This seems to be an ineffective and cumbersome solution. It certainly does not have as much flexibility as having the FO already with his platoon with an established working relationship. It might be difficult to reposition FOs during battle, especially when dismounted.

Study Sources

What were the conditions from which the Study Group drew its conclusions? I understand from reading previous articles in *Field Artillery* about FO team organization that Vietnam was a primary source of historical data from which to draw conclusions. Perhaps Vietnam was not the place from which to draw general conclusions about mechanized FO teams.

If the recent conclusions were drawn from the NTC, can we draw general conclusions for different terrain conditions such as those found in Europe (urbanized or often wooded terrain), Central America (jungle), Korea (mountainous) or other places where mechanized infantry could be deployed that are not open desert? I strenuously object to drawing general conclusions from NTC experiences without considerable qualifications. Could it be that different terrain conditions might have a considerable effect on the number of observers required? Perhaps NTC isn't any better than Vietnam to draw such conclusions.

Keep FOs

The two-man FO team is the most

effective. The amount, weight and bulk of the FIST equipment, the number of hands required to perform all functions to standard and the amount of effort to operate some very cumbersome equipment require two-man FO teams. (The DMD has a terrible display screen and a very difficult keyboard and carries like an overloaded suitcase.) Try carrying all the equipment by yourself and then attempt to execute a fire mission. You will have to put your rifle between your legs and operate the DMD with both hands while holding the compass between your teeth! As to how you are going to read your map and use the laser range finder, I have no idea. The modern FO is grossly overloaded.

One advantage of the two-man FO

team is that it can absorb at least one casualty and continue functioning. If the FISTV [FIST vehicle] is destroyed, the senior FO can take over and accomplish the mission.

Another advantage is the mutual psychological support offered by a two-man team. Buddy teams have long been shown to be superior to one man operating by himself. In addition, there is a one-to-one leader-to-lead ratio—better than having just one soldier. The FO also brings important map reading and observation skills to his platoon.

Correct the Problems

The composition of FISTs needs to be scrutinized very closely. A platoon

leader who is the main effort for his company attack could receive the largest portion of his firepower from artillery. He needs an FO to coordinate and execute fire support for him. This is a matter of great importance, and it deserves considerably more study.

Before we change our existing organization, let's determine if the system we have is functioning efficiently. I don't think it is. Let's correct existing problems and, after we have done that, try to draw proper conclusions about FIST organization.

SSG Scott B. Rogers, FA
HHB/4-1 FA
5th (Mech) Div Arty
Fort Polk, LA

HIP Howitzer Training

Having recently completed the arduous testing of the HIP howitzer (initial operational test and evaluation [IOT&E], Fort Sill, Oklahoma), I feel compelled to share some personal observations. The HIP IOT&E not only revealed what determination and discipline could accomplish, but also what is truly needed to make this powerful weapon system succeed in the near future. I hope the thoughts I share in this letter can become a foundation for developing a coherent training concept.

The HIP NCO

With the HIP howitzer, the NCO (specifically the section chief) has become a vitally important asset. Applying his tactical skills and knowledge of the weapon system, he can use the broad capabilities of the HIP. This, of course, cannot be accomplished without a well-trained section.

The HIP section is currently comprised of a section chief (staff sergeant), gunner and ammunition team chief (sergeants) and six cannoneers. All personnel must be cross-trained in their skill levels and, preferably, those of the next higher skill level. For my ideas on training at the various skill levels, see the chart.

The HIP NCOs still have many of

the responsibilities now associated with section operations; however, the HIP's potential for continuous (24-hour-a-day), mobile operations greatly intensifies the attention required for these and additional tasks. Sleep rotation, resupply operations, safety, section security and so on have become routine concerns of the section's leadership. All of these areas must be juggled in between fire missions, which must be accurately and expediently executed.

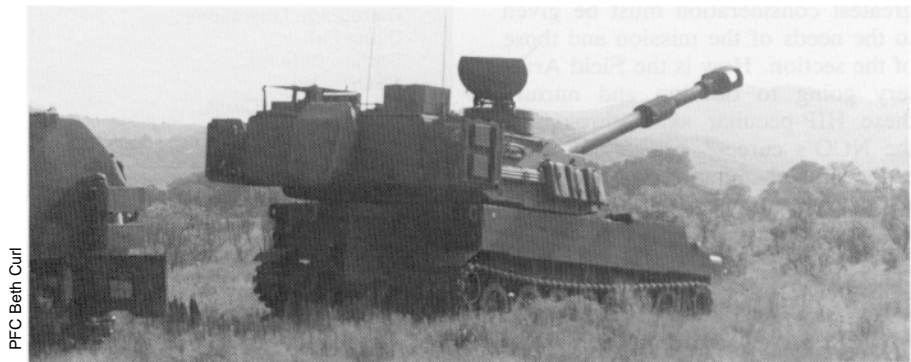
HIP-Peculiar Skills

Some areas of primary importance to effective HIP operations are communications procedures, land navigation and map reading, and AFCS (automatic fire control system) operations. These areas should be taught concurrently with HIP doctrine. In this way, the soldier can see how

competence in these areas will accomplish the mission.

The HIP NCO will have to use FM radios properly (in both the HIP and the M992 CATV [carrier ammunition tracked vehicle] and follow proper radio procedures. He must understand the peculiarities of radio communications (voice and digital) and the effects of terrain and weather on FM communications. He must be able to operate secure equipment and understand the CEOI [communications-electronics operating instructions] to ensure his HIP can fulfill its mission.

Crucial to all elements of HIP operations is the NCO's ability to navigate from point A to point B. He must pay particular attention to navigating at night while in a moving vehicle. The HIP is equipped with an on-board navigational system; however, it must be noted that this is a navigational



aid, and it will not help a poorly trained map reader. I must stress again the importance of this skill, which is currently demanded of our gunnery and platoon sergeants, but not of the section chief.

Finally, the NCO must be competent in operating the AFCS. The AFCS is neither difficult to operate nor learn about, but a thorough familiarity with it will ensure accurate data entry and quick execution of required functions. Only through continual, demanding practice will the NCO become confident. This highlights the importance of an embedded trainer within the AFCS software. The NCOs must be able to relieve each other with no degradation in fire mission efficiency.

Training

The area of training is where the greatest consideration must be given to the needs of the mission and those of the section. How is the Field Artillery going to develop and nurture these HIP-peculiar skills throughout the NCO's career? All cannon artillery isn't changing overnight, and we must continue to fulfill the needs of the soldiers operating older weapon systems. Then, we must decide how we will manage assignments, SQTs [skill qualification tests], even ARTEPs [Army training and evaluation programs] when we have placed unique demands on the HIP NCO and soldier. This is a crucial point for discussion, and I have a few suggestions.

The HIP NCO must be well-versed in HIP doctrine and, in particular, small-unit tactics. As the HIP will often

HIP Training

Skill Level 1

- Radio Communications
- Land Navigation
- M109A6 Maintenance/Operation
- M992 Maintenance/Operation
- Ammunition Handling
- Doctrine

Skill Level 2

- Radio Communication
- Land Navigation
- M109A6 Maintenance/Operation
- M992 Maintenance/Operation
- Ammunition Handling
- Doctrine
- Resupply Operations
- AFCS
- Retrograde Operations
- Direct Fire
- Section Defense

Skill Level 3

- Radio Communications
- Land Navigation
- M109A6 Maintenance/Operation
- M992 Maintenance/Operation
- Ammunition Handling
- Doctrine
- Resupply Operations
- AFCS
- Retrograde Operations
- Direct Fire
- Section Defense
- RSOP
- Survey/Aiming Circle
- Specialized Missions—Fire Support Team (FIST), Aerial Observation in the OH58D Helicopter, etc.)

be alone or with a paired howitzer, it becomes essential that the chain of command and the section understand all factors that could increase survivability. Being well-versed in doctrine will help the HIP NCO find the best way to conduct section operations within the limitations of the current situation. The section also must be able to understand the current situation and know the appropriate measures to take to

increase survivability (i.e., increase security, observe noise/light discipline, etc.).

Training for SQTs and ARTEPs will follow a different route than that for a M109A2/A3 unit. The mission of fire support has not changed, but the way in which the battery accomplishes it is quite different. These new standards and tasks must be established and tested by the soldiers who will be executing them. This, of course, must be done in conjunction with the needs of the fire support mission. Through this method we can ensure the full realization of the HIP's potential for continuous fire support.

Conclusion

The various challenges of the HIP's introduction have presented us with a great responsibility—to determine how to train and billet a HIP section. I believe the Field Artillery community should consider establishing a new MOS [military occupational specialty] for the HIP cannoneer. This is one way we will be able to track and develop the soldier and his unique skills. It may ease the question of assignments and testing as more batteries are outfitted with the HIP. The result of our *not* tracking the HIP soldier is we will spend a lot of time training and retraining soldiers upon reassignment to and from HIP units. It is essential we consider these points now before the HIP is fielded. If not, then we will have to play catch-up.

SSG Amery E. Vasso, FA
*How Btry, 1-11 ACR
Fulda, West Germany*

Field Artillery for the Future

I have read your magazine with great interest during the past few years. The advent of the National Training Center, the Battle Command Training Program, the 3x8 concept as well as the improvements and innovations of the existing weaponry and the tactics of the Field Artillery, as chronicled by your magazine, have been impressive indeed. As a novice, however, I wonder if the planners of

our future are asking all of the right questions.

The menacing Bear of the past is in the midst of chewing off an arm and both feet in an attempt to remain competitive in the centuries ahead. In the process, he is successfully blending into the woodwork to buy the time necessary to revamp the economy he can no longer count on to sustain his military agenda. Our

nation will, no doubt, use the perceived absence of overt aggression to reassess its own defense needs. It's going to take a long look at the relevance of the order of battle of its armed forces.

National policymakers are going to wonder what the Artillery's role is going to be in the war on drugs. What asset can the Artillery be in the fight against terrorism? Can the Artillery

enhance the success of "Delta-type" forces? Should the Artillery be able to help the nation strengthen the effectiveness of Contra types of forces?

The challenge of the immediate future might well be to find a means of traveling lighter, faster and less expensively through the battlefields of tomorrow. The prospect of incorporating mortar batteries within the Field Artillery, as the Germans have done in

the past, is certainly a step in that direction. Developing a hand-held indirect fire weapon that's a hybrid between the light antitank weapon (LAW) and the Stinger might be another.

One thing is clear, however. At a time when our nation's manufacturing base is eroding and it is running record trade and budget deficits, the Artillery has to become as versatile and innovative as the Bear to survive. Merely concentrating on creating bigger, better

and faster variants of the tools of the trade, may be as relevant in 50 years as obtaining bigger, better and faster horses would have been in 1936.

Michelle L. Walker
Rider College, NJ

Baseball Battle Drill

I'm writing about our Baseball Battle Drills in the hope that someone else will benefit from what I considered to be a great idea.

A Battle Drill is a training tool we use to build habits. The thought behind this is that those habits will be instinctive under conditions of great stress and confusion—combat.

Battle Drills train repetitive, often simple tasks that do not excite the average soldier. I have yet to hear a soldier excitedly discuss the possibility of running down to the motor pool so he can practice crew drills for "eleventeen" hours straight. These fundamental and vital skills are difficult to learn. They are those things you *have* to do that you keep finding excuses not to get done.

The leader's challenge is to make training fun. If we can somehow make these repetitive, simple tasks fun to learn, soldiers will retain the information longer.

I had to get my special weapons (nuclear) team ready for a technical validation inspection [TVI]. If you have ever worked in this area, you know the amount of information that a "good team knows" cannot be memorized by three "Rain Mans." The team was already tired of doing pubs drills after seven minutes, and I couldn't blame them. The NCOIC Sergeant Jeffrey D. Sharp told me he knew a game we could use. I told him to go for it.

The Drill

We played baseball, but not exclusively. We used it as a cool-down

exercise at the end of the day. Here's how you play it.

1. Get a chalkboard, posterboard (covered with acetate) or an MRE [meals ready to eat] box with rocks.
2. Draw a baseball diamond and scoreboard and get team names, lists of players and whatever special rules you wish to use.
3. Write up as many questions as you can.
4. Classify the questions as singles, doubles, triples and home runs.
5. Designate a pitcher/referee (the OIC/NCOIC) who reads the questions, makes calls on the "iffy" answers, keeps order, etc.
6. Set up your batting order and call soldiers in that order until that team gets three outs.
7. An "out" is taking too much time or giving an incorrect answer. A "hit" is a correct answer.
8. Soldiers pick their question levels (single, double, etc.). Encourage the soldiers to go for the level they can answer. You want the better trained guys trying for home runs, not just taking advantage of the singles.

Sample Questions

The first two examples are taken from the core battle drills for the howitzer section (Ironhorse Core Battle Drills book).

1. What is the first thing the assistant gunner must do when the gun pulls into position? (He must check the function of the elevation system by raising the tube off the travel lock.)
2. When does position improvement

stop? (You stop when the entire section is involved in directed training—fire mission, NBC [nuclear, biological and chemical] training, etc.—after which it's started again, and when you leave the position.)

The following two examples are taken from the *TC 6-50 Field Artillery Cannon Battery*. These are things that all artillerymen should know, or at least be familiar with.

3. What are the references that all safety-certified individuals must read before they go downrange to shoot? (You read AR 385-63, *FM 6-40 Field Artillery Manual Cannon Gunnery*, *TC 6-50 TM 43-00C1-28 Army Ammunition Data Sheets for Artillery Ammunition: Guns, Howitzers, Mortars, Recoilless Rifles, Grenade Launchers and Artillery Fuzes*, local range regs/SOPs [standing operating procedures] and the weapons technical and field manuals.)
4. What is the aiming circle used for—its primary function in a firing battery? (It is the primary means of orienting the cannon battery or laying its weapons on the azimuth of fire.)

This is a very brief explanation of the game. We developed our own unique rules. If you use this idea, you will also.

This is a great review tool and involves minimal preparation time. The hard part is writing up all the questions and answers.

1LT Matthew Q. Dawson, FA
B/3-29 FA
Fort Carson, CO

What Role for Artillery in LIC or MIC?

by Lieutenant Colonel John C. Merriam



1st LT William Rast

Low-Intensity Conflict—A politico-military confrontation between contending states or groups below conventional war and above the routine, peaceful competition among states. It frequently involves protracted struggles of competing principles and ideologies. Low-intensity conflict ranges from subversion to the use of armed force. It's waged by a combination of means, employing political, economic, informational and military instruments. Low-intensity conflicts often are localized, generally in the Third World, but contain regional and global security implications.

FM100-20 Military Operations in Low-Intensity Conflict
1 December 1989

The definition of low-intensity conflict (LIC) is a paradox and presents a challenge for artillerymen. Given today's world situation, we can't afford to ignore it. Yet the paradox is that the artillery's enormous power, if used at all, must be constrained, which seems contradictory. The challenge is to find the means and rules for doing so while still maximizing the artillery's persuasive employment potential.

The future ain't what it used to be.

Yogi Berra

One fact is now clear. The rest of this century will see the most significant changes in the world political order since the decolonization that followed World War II. We couldn't have foreseen most of these recent and often astounding events even a year ago. Along with the possibility of a more peaceful Europe (at least for the US) comes the realization that more likely areas for use of our military force are

elsewhere, perhaps even in our own backyard. The events of 20 December 1989 in Panama clearly bear this out.

As the prospects for a mid- or high-intensity, heavy-force conflict in Europe diminish, the low end of the spectrum deserves renewed interest—both LIC and what I'll call "light-force MIC" (mid-intensity conflict). We in the Field Artillery need to focus on the new reality as it unfolds to find the smartest and most realistic ways to contribute to America's defense, ways that are affordable and effective.

A New Lexicon

We're all familiar with the vocabulary of the European battlefield of the last 20 years. It's no surprise that it too is changing, and a new lexicon is appearing we must become familiar with. (See Figure 1.) Many of the old concepts of a Soviet theater strategic offensive (TSO) still remain valid, but the idea of fighting at parity with perhaps fewer forces alters the artillery picture as never before. The advent of precision guided munitions and smaller,

more agile and lethal enemy combat formations radically alters the planning environment.

Should we now forget this picture and focus solely on non-European scenarios? Decidedly not! Europe should remain the worst-case planning threat for the foreseeable future. But to get a better appreciation of fire support implications in a LIC or light-force MIC scenario, we must look elsewhere. In this article, I discuss jungle and desert situations, our most likely contingency environments. But first, let's take a closer look at LIC.

The Intervention Scenario

If one accepts as a working definition of politics that it's the art of keeping one's house in order, then international politics is the means by which nations deal with one another to resolve their differences. Most also would agree that the use of military force is only one of the instruments available to a nation.

Given that the distribution of natural resources, physical environments and concomitant human economic activity isn't uniform and then superimpose

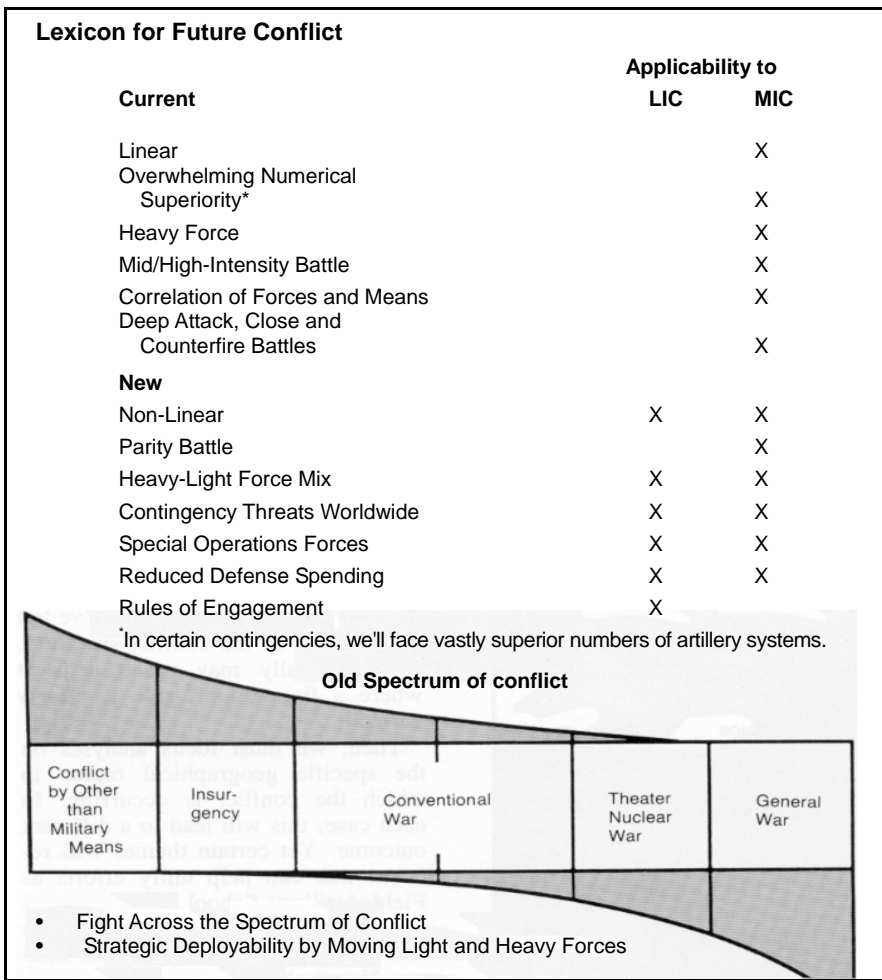


Figure 1: A new reality for Army planners is emerging, and it has its own lexicon.

differences in cultures and historical experience, it's perhaps a wonder we're not more involved militarily in conflict resolution than we are. And yet, whether you believe the glass is half full or half empty, conservatism is still the hallmark of military analysis. So we must examine closely the points at which US military intervention is most plausible.

Non-Conflict

In trying to describe where military involvement begins and to understand what that may mean for the Field Artillery, a model is useful. (See Figure 2.)

Conceptually the model is closely tied to the old spectrum of conflict framework. What the Intervention Scenario Model says is that short of open conflict resolution, which might require military force, other political instruments are preferable—more useful and effective. American responses to political instability will draw on peaceful methods to improve the situation and reduce tension in the region. In each instance, they'll be tailored to the needs of the situation and carried out in consultation with allies and disputants. As part of these responses, military involvement may begin when military assistance organizations are introduced, such as military assistance and advisory groups

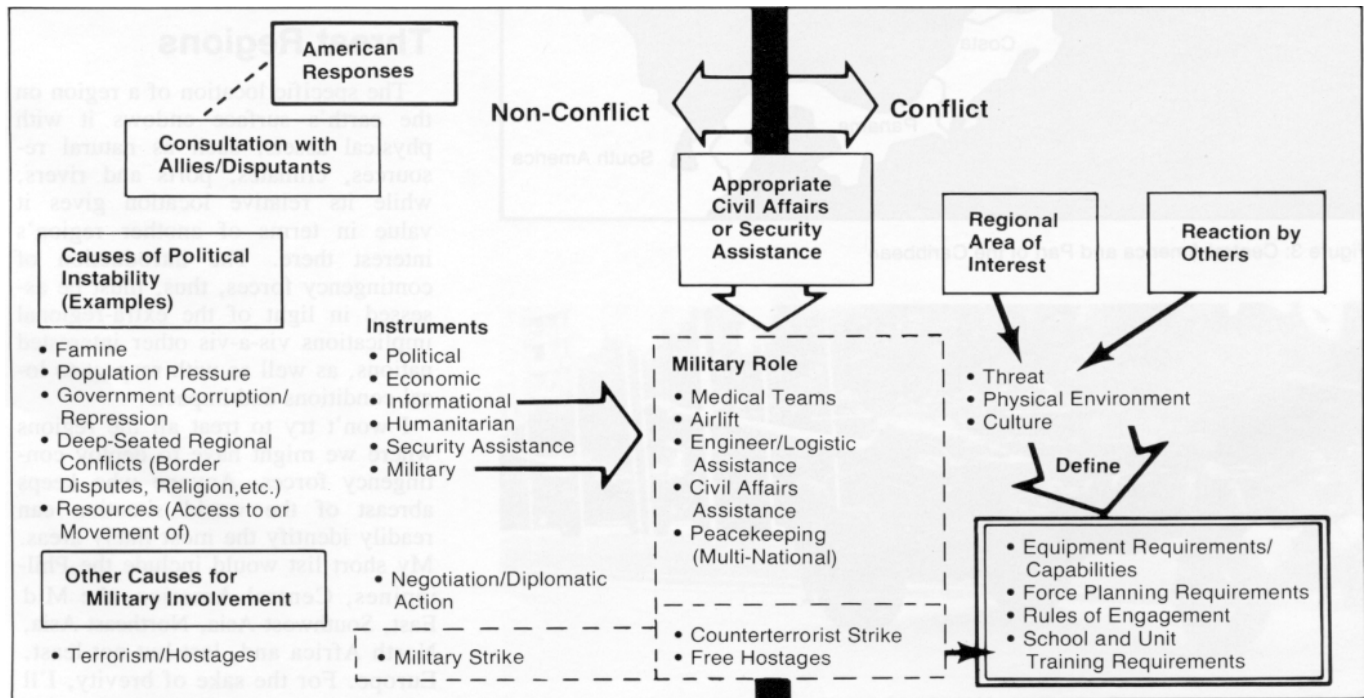


Figure 2: The Intervention Scenario Model

(MAAGs) and security assistance offices (SAOs).

At this point, military activities primarily support nation building. They could include advisory assistance to the host country's military to strengthen its ability to deal with threats to the government or simply call for an exchange of intelligence and military

assessments. The latter point can't be overemphasized as the single most valuable contribution we can make. In all cases, we'll introduce people in uniform carefully, under strict rules and in limited numbers.

At this point, it's conceivable that an artillery officer, NCO or training team could be needed. Here, then, is

one of the first missions for the Field Artillery School to come from this closer look at the lower end of the spectrum: teach the key tasks for participating in such activities. I'll speak to this in more detail later.

Conflict

In the Conflict portion of Figure 2, a different set of conditions exists. Here, a political decision to take military action has occurred. The decision must be defensible internationally (at least to our satisfaction), appear to be in accordance with American values, reflect our strategic interests and have the support of the American people. The Model says that under these conditions we'll send in a contingency force, recognizing full well we've left the low end of the conflict spectrum. We eventually may reach a point where a fire support role is clearly defined.

Then, we must focus analyses on the specific geographical region in which the conflict is occurring. In each case, this will lead to a different outcome. Yet certain themes will reoccur that can help unify efforts as Field Artillery School graduates prepare for contingency operations. This is also true for units willing to conduct thorough front-end analyses.

Threat Regions

The specific location of a region on the earth's surface endows it with physical assets, such as natural resources, climates, ports and rivers, while its relative location gives it value in terms of another region's interest there. The introduction of contingency forces, thus, must be assessed in light of the extra-regional implications vis-a-vis other interested nations, as well as with respect to local conditions and impacts.

I won't try to treat all the regions where we might have to deploy contingency forces. Anyone who keeps abreast of the world situation can readily identify the most likely areas. My short list would include the Philippines, Central America, the Mid East, Southwest Asia, Northeast Asia, North Africa and, last but not least, Europe. For the sake of brevity, I'll address just two: Central America and the Mid East.



Figure 3: Central America and Part of the Caribbean



East Germans stand by a Soviet-made M1946 152-mm howitzer while they watch a military parade in 1981.

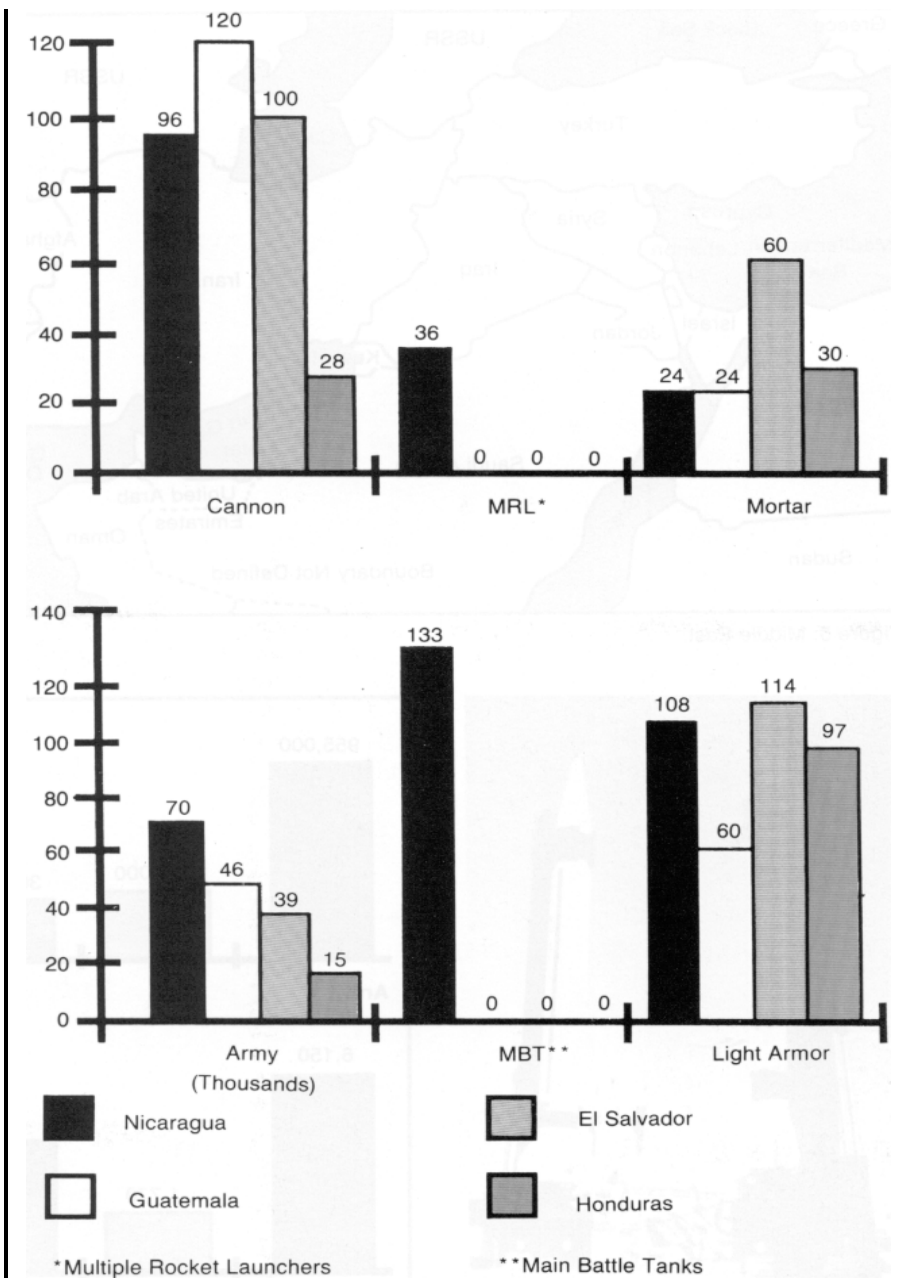


Figure 4: Central American Threat. Clearly the greatest threat in Central America outside of Cuba is Nicaragua.

Central America

The region is bounded by Mexico on the north, Panama on the south and Cuba in the Caribbean. (See Figure 3.) Here the dominant cultural heritage is Indian and Spanish, with an African influence also found on the Caribbean side. The population is basically rural with the exception of the capital cities and their environs. It's predominantly Catholic, Spanish-speaking and is denser on the western side of the central cordilleras.

Geographically, the dominant climate is tropical with a dry season found on the west and rainfall year-round on the east. Rainfall in excess of 60 inches per year is the norm. Primary economic activities include oil production in Mexico, plantation agriculture along the Caribbean and coffee production in the mountains. Temperatures are hot year-round and average more than 80 degrees F.

Clearly the greatest threat outside of Cuba is Nicaragua (see Figure 4). Although it would fit comfortably in

an area the size of Georgia, it dominates the isthmus politically and militarily and has been the central focus of our regional foreign policy efforts during the entire Reagan presidency. Our desire to bring democracy to the region has been thwarted so far by the Nicaraguan regime. We have a military presence in neighboring countries, which helps in using the intervention approaches discussed earlier.

Nicaragua is the only country with tanks, and its artillery includes 36 BM21s (trunk-mounted multiple rocket launchers) and towed 122- and 152-mm howitzers. An intervention force should anticipate a military reaction from Cuba and, possibly, extraordinary assistance from the Soviet Union. Since much of Nicaragua's equipment is Soviet and a sizeable contingent of Soviet advisors is present, we could expect to see stylized Soviet tactics and doctrine in a force-on-force engagement. Ports, airfields and useable hydrography (for amphibious landing operations) are available but will be defended since they are few in number. Our current force structure allows us to tailor force "packages" to counter the Nicaraguan threat.

Mid East

The area shown on the map (see Figure 5) bounds a heterogeneous cultural region. As scholar Harm J. deBlij says in his book *Geography: Regions and Concepts*, "This is the so-called Arab world (although millions of its inhabitants are not Arabs), the 'dry' world (although the exceptions to its dryness have made it what it is), [and] the 'world of Islam' (although millions belong to other faiths)"—John Wiley and Sons, 1971.

Its cultural diversity, strategic position (relative location), the unstable nature of political relationships and huge resources of oil keep the potential for conflict high and guarantee it will remain an area of US strategic interest. The population lives where there's water, which describes its proximity to the littoral or river basin areas.

Temperature extremes range from winter lows of below zero in the northern mountains to summer highs of above 130 degrees in the lower, more central desert areas. Rainfall patterns

vary and range from less than two inches per year to more than 20 in some areas. Rugged mountains and desert sands limit movement in many areas. The predominance of flat, rocky surfaces makes self-protection difficult.

The Mid East, as we all know, is armed to the teeth. Figure 6 shows the relative numbers of weapons systems of a few of the major states. Not shown is the fact that Iraq, Iran and Syria plus Libya, Egypt and Yemen (South) have some sort of surface-to-surface missile.

Of more concern to artillerymen is the range of the predominant weapons systems shown in Figure 7. Above the line are the ranges of likely US force artillery systems. Below the line are ranges of systems deployed by possible threat forces, which leaves us far out-ranged.

Even more troubling is that the operational environment, in addition to being physically harsh, is steadily becoming more lethal. The spread of high-technology weapons or the indigenous production of them doesn't bode well for a contingency artillery force. The previous use of chemical weapons, proliferation of regional nuclear weapons and the demonstrated willingness of combatants to employ massive artillery strikes challenge every aspect of force training and development.

There are clear messages here, which we as a community (Field Artillery School and units) must address. At the highest levels, we must intensively review deployment missions for units with Mid-East scenarios. One cannot comfortably contemplate projecting forces into such an artillery- and missile-infested part of the world for any length of time. But if we do, our artillery force must be more survivable than it is today.

Systems' Design Limitations

The challenges arising from each region and situation are multivariate. Physical aspects of the operational environment will drive materiel solutions in many specific ways, particularly if the extremes of climate approach any of the design limitations of a piece of equipment. For example, if we're building a howitzer to perform multiple roles (given a constrained budget), we must accept a

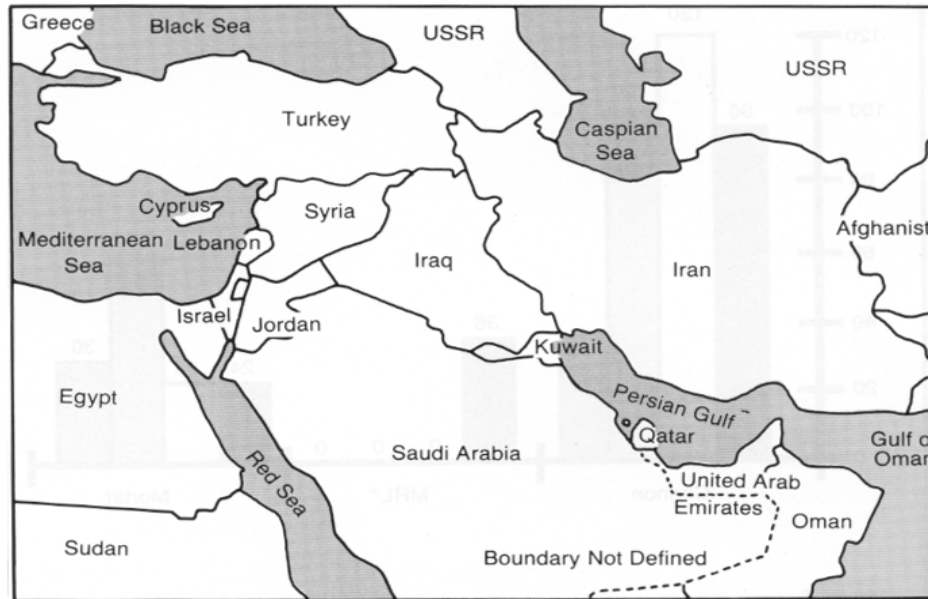
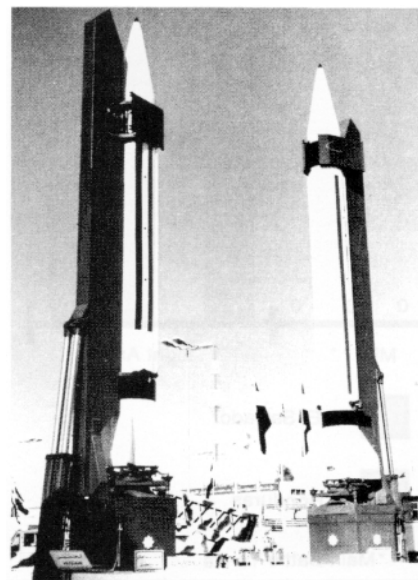


Figure 5: Middle East



These SCUD B ballistic missiles modified by the Iraqis help prove the Mid East is armed to the teeth.

certain, we hope very low, degree of risk that it will not perform when we need it to.

Cultural Impact

Similarly, the culture of a region, the totality of its way of life (politics, religion, economics, etc.), will have an impact on the rules under which military forces carry out their mission. The culture could work against our forces in the ways the combatants fight, view war or value human life.

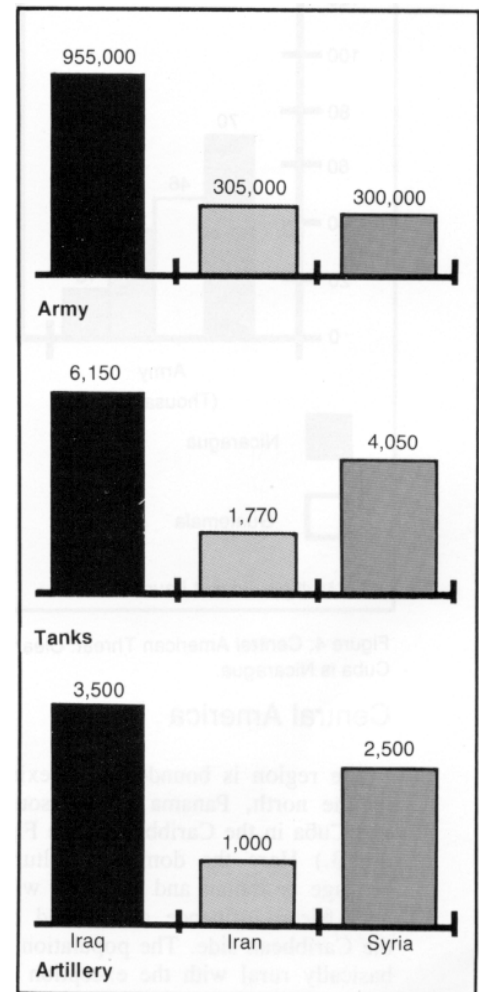


Figure 6: Middle East Threat. Comparisons of Armies and Selected Weapons Systems of the Major Threat States

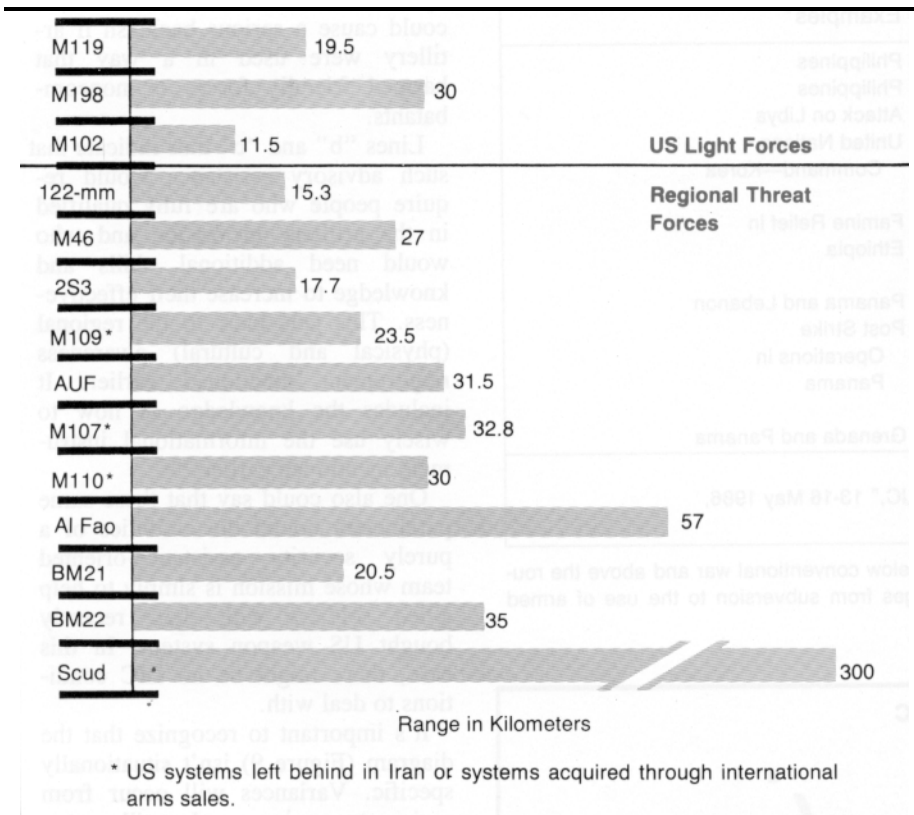


Figure 7: Mid East Threat. Comparison of the maximum ranges of predominant US (light forces) and threat weapons systems, using the farthest-reaching projectile for each system.

Or, we could work against the cultural mores.

Artillery is certainly not a subtle instrument for winning the hearts and minds of a people, even when used by the host nation's military. It shocks, maims and kills. If it doesn't always hit the intended (legitimate) target, isn't always used within the ground rules and doesn't have the full acceptance of the friendly local populace whose property and livelihood it disrupts, then it's working against us, not for us.

Intelligence and Diplomacy

A thorough understanding of the military threats to the contingency force is vital. This requires accurate intelligence of the operational theater as well as a concerted effort to limit the possibilities for escalation through vigorous diplomatic efforts. We may go into an area and win a few battles only to lose the war when "big brother" shows up.

CINCs' Role

We also must understand one other aspect of regional analysis that relates to how we design and train our

future artillery force—the role of the commanders-in-chief (CINCs). Given our unified command structure and global missions for our forces, the CINCs are crucial to regional conflict resolution.

Within their theaters, they're responsible for planning and conducting operations using their own forces and, if needed, those coming from outside their theater. Notice I didn't say those deploying from the continental US (CONUS). It's well within the context of current thinking that CINCs can be asked to support the contingencies of other CINCs—e.g., US European Command (USEUCOM) can dispatch forwardly deployed forces in support of US Central Command (USCENTCOM).

Thus, for artillery force planners, the criticality of creating the right mix of forces (some for the heavy scenario, some for contingencies that require truly deployable systems) becomes the overriding concern. Once again, we must realistically assess regional threats, attempt to predict future activities and make hard, nonsense decisions in light of acceptable degrees of risk.

Unforeseen Interventions

To complete the Intervention Model, a word must be said about unforeseen interventions. How can we foresee terrorist actions? Once they occur, what implications are there for the artillery? The answers—we can't and, possibly, not much. We're pretty much back to square one and have little direct role unless the nature of our response leads to a situation where sizeable forces are required and we enter the conflict that way.

Artillery Roles in LIC and MIC

The preceding lays part of the groundwork for any front-end analysis about fire support in contingency operations. But it doesn't answer the first question of whether artillery has a role in LIC at all. If you look at some of the manifestations of LIC (see Figure 8), you'll see the use of artillery in most of the situations would not be appropriate. This groundwork also doesn't tell us much about training and preparing artillerymen to be part of the military presence early on as part of America's response. To get at these questions and to shed some light on what the Field Artillery School can do to help prepare officers and NCOs for LIC and MIC, we must examine our roles and missions.

Artillery Roles and Missions in LIC

The diagram in Figure 9 portrays the range of possibilities to be considered in addressing what we need to do to prepare for the broadening scope of future Army operations. Line "a" defines the actual introduction of a US artillery force package. Short of that line, there's no role for a ground force (Line d1).

Here the dominant instruments are political, informational and economic, not military. Of these, a case could be made for our military advisors to be conversant with the value of using the media to our own advantage to portray the good things the host country's military is doing. Another tool is the proper exchange and use of intelligence, which in LIC is one of the most powerful of informational tools.

LIC Military Operations	Examples*
Insurgency	Philippines
Counterinsurgency	Philippines
Counterterrorism	Attack on Libya
Peacekeeping	United Nations Command—Korea
Peacetime Contingency	
• Humanitarian Assistance	Famine Relief in Ethiopia
• Noncombatant Emergency Evacuation	Panama and Lebanon Post Strike
• Military Presence	Operations in Panama
• Peacemaking	
• Strike Operations	Grenada and Panama
*Author's Examples	
"Defense Intelligence Agency Symposium on LIC," 13-16 May 1986, DDB-2300-21-86 (Unclassified Extract)	

Figure 8: LIC is a politico-military confrontation below conventional war and above the routine, peaceful competition among states. It ranges from subversion to the use of armed force and is waged by a combination of means.

Artillery Roles and Missions in LIC and MIC

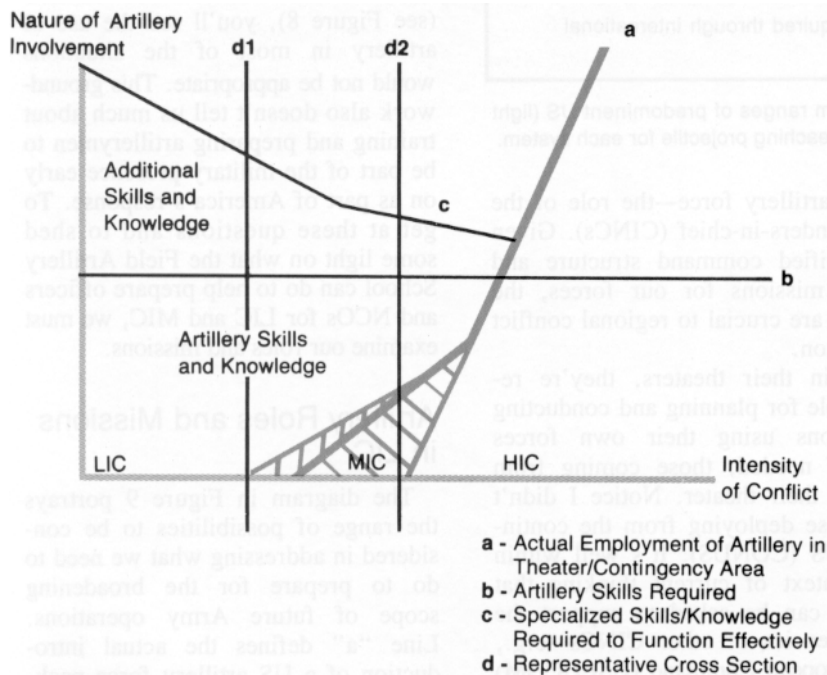


Figure 9: The Skills and Knowledge Artillerymen Need to Participate in Various Levels of Military Intervention

This approach is compatible with further characterizations of LIC that say it's often motivated by deep-seated cultural, social or psychological feelings; that it's a long-term process with a great deal of ebb and flow; and that it'll often have multiple participants supporting various factions to varying degrees. Unless some

of the external support includes things such as weaponry, which could seriously destabilize the situation, there's no need for a significant US military response.

However at this level, there's a very real possibility that a training team could help at the country's artillery school. This effort could shore

up deficiencies which, if not fixed, could cause a serious backlash if artillery were used in a way that harmed friendly forces or noncombatants.

Lines "b" and "c" thus indicate that such advisory assistance would require people who are fully qualified in the artillery profession and who would need additional skills and knowledge to increase their effectiveness. This gets back to the regional (physical and cultural) awareness requirement mentioned earlier. It includes the knowledge of how to wisely use the informational instrument mentioned earlier.

One also could say that these same parameters bound the activities of a purely security assistance-oriented team whose mission is simply to help allied soldiers with their recently bought US weapon system. In this case, there might be no LIC conditions to deal with.

It's important to recognize that the diagram (Figure 9) isn't situationally specific. Variances will occur from region to region, and artillerymen must be familiar with the specifics of their situation. The more one understands about the history and language, the underlying nature of the conflict, the mission of the country team, the equipment used by their artillery and other such specifics, the better each Redleg will perform.

Artillery Roles and Missions in MIC

The cross-hatched areas in Figure 9 around the LIC and MIC boundary acknowledge the fact that military planners often have difficulty defining the demarcation line between low-intensity and conventional or mid-intensity conflict. As defined by the Command and General Staff College, Fort Leavenworth, Kansas, "a mid-intensity conflict will see force-on-force engagements between two or more nations employing the most modern technology and resources in intelligence, mobility and firepower (excluding nuclear weapons), command, control and communications and service support for limited objectives under definitive policy limitations as to the extent of force or geographic area that might be involved." One of the dangers we face today is situations that begin as LIC can escalate quickly.

Looking at a cross section taken at Line d2 of Figure 9, we can see that a contingency force has been introduced and it has a tailored artillery package. How much, what caliber and what other types of support required will depend on the mission and situation.

To further distinguish this conflict from LIC, the contingency forces fully expect to have to fight organized threat forces if deterrence fails. This situation simply may have evolved as tension escalates from the low-intensity level. Or, it suddenly may appear as the most appropriate response to an incident that was unforeseen, such as a hostage situation or a sudden seizure of a strategically significant location by a hostile power.

The key to preparing for contingency force operations is to have current, solid intelligence about specified mission areas ahead of time and to have broadly based assessments about possible reactions by third countries well in hand. For the artilleryman on the ground, he also must be aware of regional specific conditions, such as climate and culture.

Intelligence

Good intelligence allows military forces to be operationally effective from

the outset. But I need to *emphasize* the need for artillerymen to take along adequate map portfolios and survey and meteorological gear.

Maps. Depending on the region, you may find the maps you need aren't readily available. For the short-notice Grenada operation, some forces had to use Michelin road maps. You also may find that once there, the maps may not be as accurate as you're used to. With planning, you should be able to get the scale you want.

Rules. Second, you need to know ahead of time what the rules of engagement are. These points apply to both LIC and MIC. The rules are dictated by your mission and the culture of the region you enter. They may result in your having to operate in very restrictive fire conditions as we often had to in Vietnam.

One often heard in Vietnam a battle damage assessment (BDA) report, "Two water buffalo KIA" (killed in action). It sounded funny, but if true, it meant that some farmer's livelihood had just been stripped away—an event not conducive to fostering good relations.

Similarly, if you need to register your weapon, you need to know if you just can go out and shoot it or if there's an area cleared by the local government to use. Once again, this can become a very

serious matter and set forces in motion against you that will be hard to control later on.

Radars. A last tip is to think about your radars. This falls under the heading of tactics, techniques and procedures (TTPs). We habitually tie a radar to an artillery "shooter." As has been suggested, why not tie them to a squad of light fighters or to a helicopter gunship, either of which can go in and surgically take out an offending hit-and-run mortar section? Given an urban setting such as we just saw in Panama, this might be the best use of our fire support capabilities. I'm suggesting you can be more effective if you consider fresh techniques that may depart from standard practices, provided they work.

Putting the Equation Together

This brief front-end analysis suggests we have areas to focus on if we're to grapple effectively with the new vocabulary. In Figure 10, I took the new lexicon ("boxed" words) and the challenges for the Field Artillery and categorized them in the five Training and Doctrine Command (TRADOC) domains. We need to

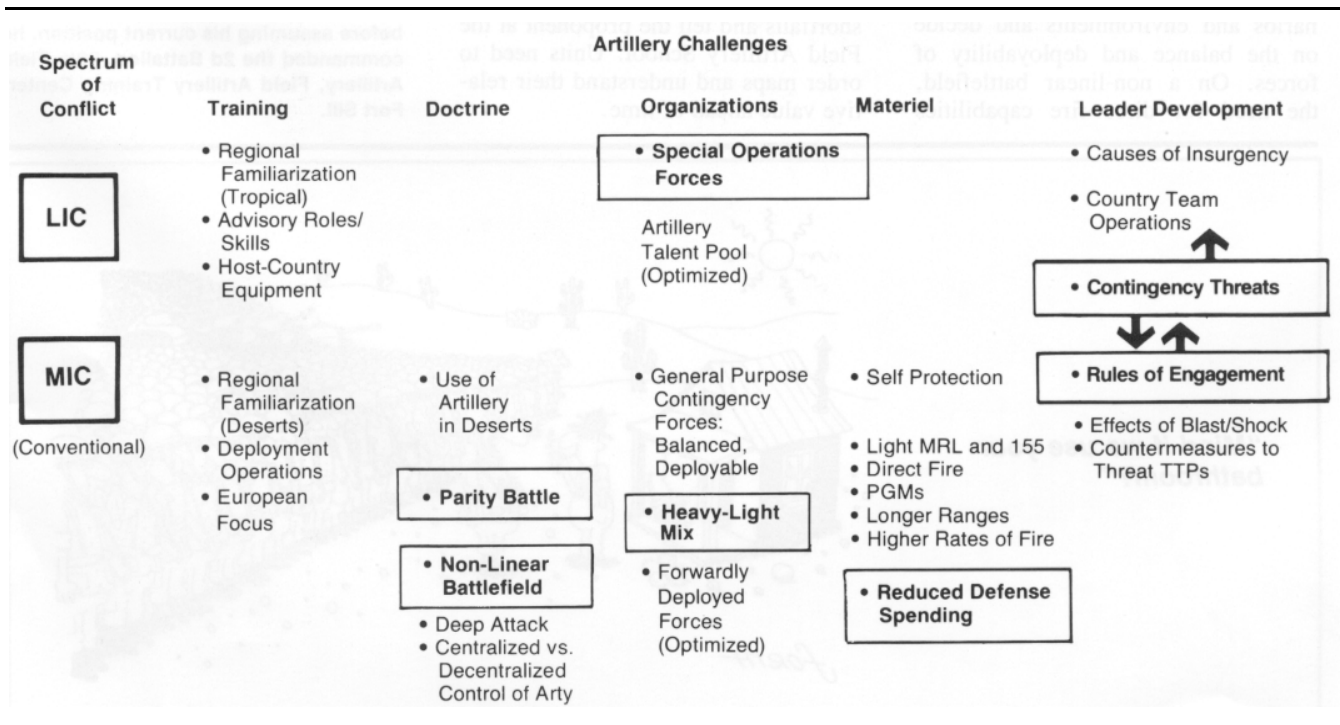


Figure 10: The Field Artillery LIC and MIC challenges are categorized in TRADOC's five domains. Note the new lexicon is "boxed."

spend some time on these to "level our bubbles" with respect to contingency operations. For ease of presentation, I discuss aspects of these domains in areas of responsibility—the Field Artillery School and units.

Field Artillery School

We need to teach both regional threats and regional analysis. Most LIC is associated with developing nations in the Third World. This eliminates the need to look at cold or icy climates and favors desert and tropical regions. The current Officer Advanced and PreCommand Courses touch on these areas, but we still need to look at other programs of instruction to see exactly what needs to be in each and how best to address key topics.

We need to expand student sensitivity to include a more sophisticated approach to conflict resolution. Defining the role of advisors, deciding on rules of engagement and understanding how they effect combat operations, clarifying military roles short of war and using the media and intelligence are all areas to consider.

We must examine our doctrine to see what needs to be added or changed, given the broader missions of participating in LIC or contingency MICs.

Combat development activities must address a range of threat scenarios and environments and decide on the balance and deployability of forces. On a

non-linear battlefield, the need for direct-fire capabilities increases. In a desert, the need for a self-protection (i.e., a dozer blade or organic entrenching vehicle) seems patently obvious. Both these requirements are reinforced by the future European scenario.

In all, we should borrow from the lessons of history, as well as from units that have actually dealt with some of these issues. An overview of unit deployment procedures and after-action reviews and lessons learned from the light divisions' battle command training programs (BCTPs), the Joint Readiness Training Center rotations at Fort Chaffee, Arkansas, and actual conflicts such as Grenada, Panama or El Salvador come readily to mind.

Units

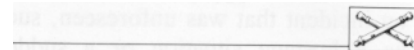
Forwardly deployed forces need to consider contingency requirements and develop plans for operations outside their immediate areas. They should do some training to sustain knowledge and skills needed in the new environments. Ensuring the proper logistical and intelligence structures are available once in the area of operations is a *must*.

Within contingency mission areas, detailed threat assessments need to be ongoing and address the range of the most likely threat responses. Deployable units need to identify capability shortfalls and tell the proponent at the Field Artillery School. Units need to order maps and understand their relative value ahead of time.

Conclusion

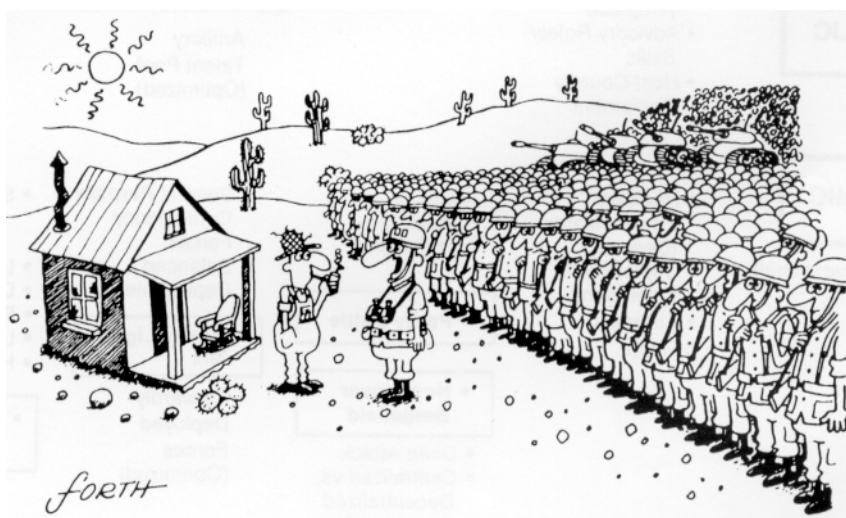
Now is *not* the time to forget the high-intensity end of the conflict spectrum. Even in the post Conventional Forces Europe (CFE) Treaty aftermath, there's no question the Soviets will retain a qualitatively superior artillery force, probably through the turn of the century.

At the same time, however, new missions and requirements are being defined for artillerymen that will have a lasting effect on our Branch. It's time we take a serious look at how to address them—then get on with it.



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"Mind if we use your bathroom?"





Nimrod Dancer *Artillery:* **Fire Support in Low-Intensity Conflict**

by Colonel Joseph E. DeFrancisco and Major Robert J. Reese

Until recently, Field Artillerymen remained on duty at the Caribbean end of the Panama Canal. They provided direct-support (DS) artillery for Task Force Atlantic since the emergency deployment of Operation Nimrod Dancer forces in May 1989. These 7th Infantry Division (Light), or 7th ID (L), soldiers from Fort Ord, California, explored the role of light artillery in low-intensity conflict (LIC). This article examines the LIC missions performed by the 2d Battalion, 8th Field Artillery (2-8 FA), during its five-month deployment to Panama in the summer of 1989.

The situation in Panama is an excellent LIC test bed for examining conventional-force doctrine. The continuing mission of Nimrod Dancer forces offers a unique opportunity to refine the definition of LIC, clarify its relationship to national strategy and examine existing force structure and doctrine. The current definition, which includes foreign internal defense, terrorism counteraction, peacekeeping operations and peacetime contingency operations, is an adequate framework within which to examine LIC in the Panama mission.

National Strategy

Operation Nimrod Dancer is a clear example of the implementation of US

national strategy. As former President Reagan said in his "National Security Strategy of the United States," *the protection of US citizens and property and the deterrence of hostilities through projected strength represent principal national strategy objectives* (The White House, January, 1988).

The National Command Authorities (NCA) showed their intent to protect US interests and demonstrated the flexibility of the national defense strategy by reinforcing security elements in Panama in early May 1989. Together with forces stationed in Panama—the 193d Infantry Brigade (Light) and Special Forces, Navy and Marine elements—Nimrod Dancer forces deterred further hostilities against US interests while maintaining the capability to defeat the source of

aggression.

The Light Infantry Division and LIC

The light infantry division increases the range of options available to the NCA. Its ability to deploy rapidly to a crisis area demonstrates national resolve and can defuse the crisis and facilitate rapid return to a peaceful environment.

In May, the 7th ID(L) deployed lead elements of its Division Ready Brigade (DRB) through Howard Air Force Base, Panama, to Fort Sherman, the home of the US Army Jungle Operations Training Center (JOTC). The force, which became

known as Task Force (TF) Atlantic, consisted of a reinforced battalion task force, the 9th Regimental Headquarters, elements of the 2-8 FA and a combat support and combat service support package. All units deployed forward from the lodgement area by helicopter or by wheel and landing craft to close on Fort Sherman less than 60 hours after notification to deploy from Fort Ord.

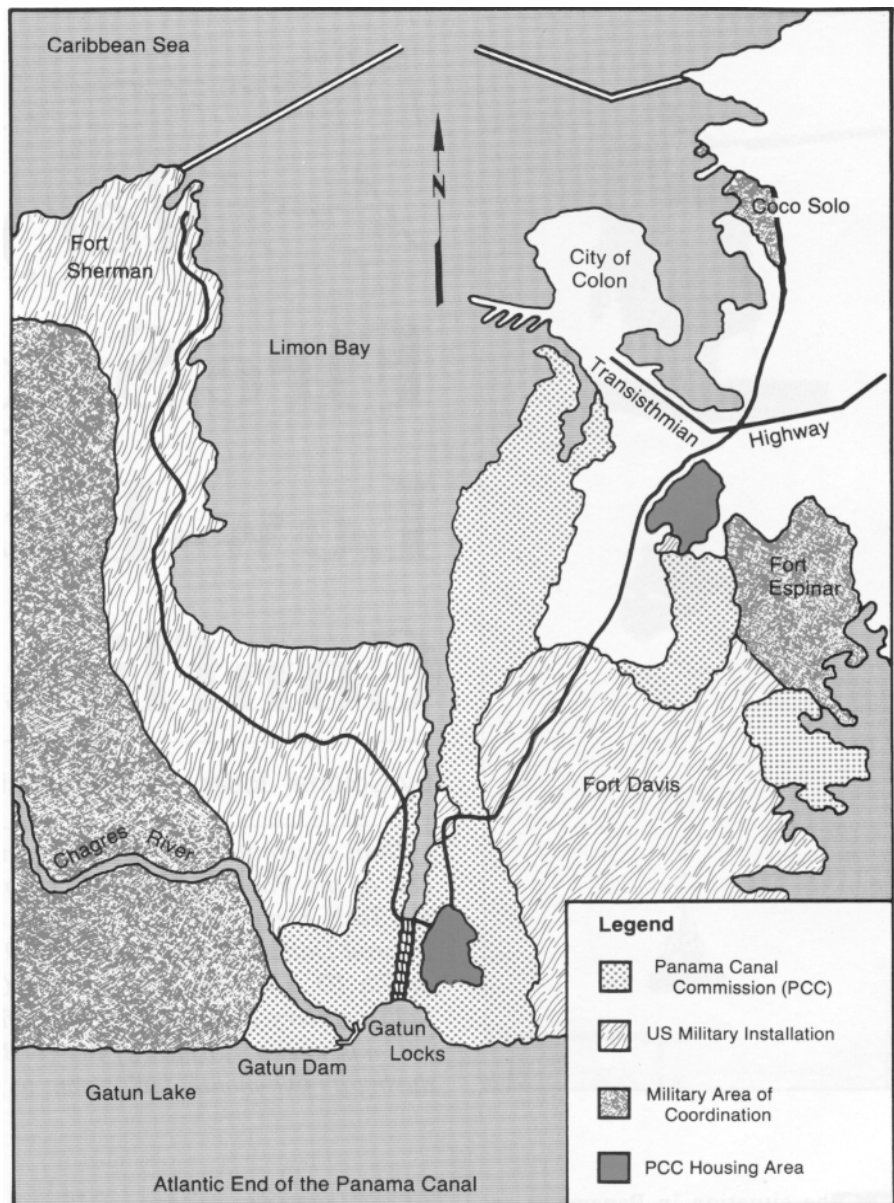
The training and discipline of light forces are key parts of the foundation for our deterrence policy. The quality of their performance, combined with a demonstration of controlled strength, sends a clear message to a potential aggressor.

Task Force Atlantic, commanded by Colonel David R. E. Hale, exhibited its thorough training during the initial deployment and subsequent operations. The majority of the Task Force conducted a similar deployment to Honduras during the previous year, and the infantry task force and lead artillery battery were formed from mature cohesion operational readiness training units (COHORTs). These and other factors produced exceptionally well-trained and disciplined soldiers capable of routinely carrying live ammunition and applying complicated rules of engagement in a politically sensitive situation.

Shortly after arriving at Fort Sherman, infantry companies deployed forward to Fort Espinar and Coco Solo where they came face-to-face with Panamanian Defense Force (PDF) units stationed adjacent to US housing areas. The professionalism and discipline demonstrated in their tactical deployments and subsequent security operations reassured US families and deterred PDF aggression.

The Light Artillery and LIC

The Panamanian mission provided the 2-8 FA, commanded by Lieutenant Colonel Perry F. Baltimore III, a broad range of experiences to explore the role of light artillery in peacetime contingency operations. Colonel Hale integrated his DS artillery into all TF operations. Its missions included support for freedom of movement convoys along the Transisthmian Highway, daily security activities in US military communities, joint training



Panama Canal Area of Operations for Task Force Atlantic

exercises, show-of-force operations and contingency planning.

Artillery LIC Doctrine

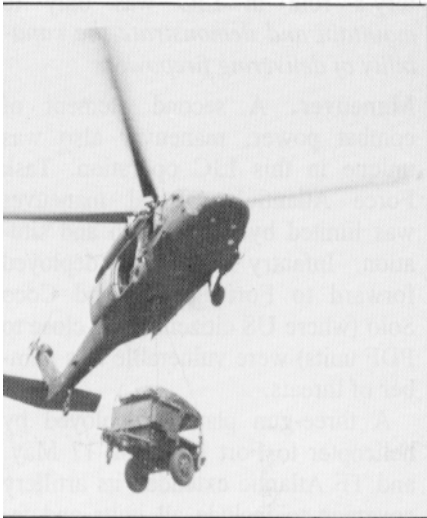
Unfortunately, doctrine provided little guidance for the employment of light artillery in LIC. The members of the 2-8 FA stood ready to support the 7th Division Ready Brigade forces in accordance with current Field Artillery doctrine as they prepared for their rapid deployment mission. However, available doctrine focuses on war-fighting in mid- to high-intensity conflict where the delivery of fires and fire support coordination outweigh other factors. Only *FM 6-20-50*

Fire Support Operations: Light Infantry Brigade hints that "normal operations" could focus on something other than the employment of extremely lethal weapon systems in rapid, violent operations.

The soldiers of 2-8 FA found themselves in a conflict of a very different nature where the rules of engagement and political considerations were paramount. While they were well-prepared for war-fighting, daily operations fell well short of war.

Command and Control

When Lieutenant Colonel Baltimore deployed elements of his 2-8



A UH60 Black Hawk airlifts a Q36 Firefinder radar during airmobile training.

FA through Travis Air Force Base, California, his mission appeared straightforward: deploy rapidly to Panama and provide direct support for elements of the 9th Regimental Combat Team. Once on the ground, he found a curious situation. Two-thirds of his battalion deployed to Panama, but only a small staff element and radar section remained under his control. (A second radar section from the 6-8 FA deployed with the 9th Regimental Combat Team, but it remained at Howard AFB under the control of the 193d Infantry Brigade.)

Bravo Battery was attached to the 2-9 IN (Infantry) as part of the first battalion task force to arrive during the emergency deployment. Charlie Battery was attached to the 1-9 IN for deployment to Panama and remained under its control during a rotation through the JOTC in May and June. Lieutenant Colonel Baltimore's staff initially included the Regimental Fire Support Element (FSE). The Regimental Fire Support Officer (FSO) remained at the Panama City end of the Canal for the first week of the operation to coordinate the Regiment's activities with the US Army South (USARSO) and Joint Task Force Panama. Consequently, Lieutenant Colonel Baltimore found himself supporting Regimental contingency planning, coordinating artillery battery training and assisting the maneuver units in their control of his elements with a very small staff.

The small battalion staff was extremely busy with operational planning,

training and administrative responsibilities. The 2-8 FA staff played an important role in TF Atlantic contingency planning as its force artillery headquarters. The staff also coordinated joint exercises, live-fire training and administrative support for the two batteries. The management of training resources became a critical function with show-of-force operations playing an important role early in the operation. The staff quickly overcame its lack of experience in dealing with USARSO and routinely executed highly visible, realistic training exercises with other services.

Task Force Automatic

Surprisingly, Lieutenant Colonel Baltimore and his staff made their most significant contribution to Task Force Atlantic as the controlling headquarters of a maneuver task force. Operational constraints prevented the US Army from deploying enough maneuver command and control headquarters to effectively accomplish the TF Atlantic mission. In addition, political sensitivity and the rules of engagement combined with the complexity of the situation to compress the levels of command. For example, the USARSO commander had to monitor the operations of small units because their actions influenced decisions in Panama and the United States. In TF Atlantic, the factors of mission, enemy, terrain,

troops and time available (METT-T) dictated a requirement for one more maneuver command and control headquarters than Colonel Hale had available.

The subtle differences in the orientation of selected artillery staff sections didn't prevent the 2-8 FA from effectively performing this non-standard mission. The 7th ID(L) and others had experimented with non-standard missions for the Division Artillery in non-combatant evacuation operations and other scenarios. Unfortunately, neither artillery nor LIC doctrine envision employing artillery in this manner. Lieutenant Colonel Baltimore and his staff deployed to Panama with no expectation of performing anything but fire support tasks.

Deployment

In early June, the 2-8 FA began planning to deploy to Coco Solo as Task Force Automatic. The 2-9 IN headquarters and one infantry company deployed forward to Forts Davis and Espinar in late May to ease the congestion at Fort Sherman. Their movement provided an effective counter to the PDF 8th Infantry Company stationed at Fort Espinar, a military area of coordination shared by both armies under the Panama Canal Treaty.

This left Coco Solo, the only military housing area at the northern end of the Canal, with limited security. Joint US-PDF military police patrols



A howitzer section is in position near the vacant Coco Solo Elementary School.

and a small Navy security office protected US housing in this military area of coordination, which also contained the barracks of the PDF Naval-Infantry Company. Coco Solo offered the space to house a small task force and further relieve the congestion experienced on the western side of the Canal. Consequently, Lieutenant Colonel Baltimore received the mission of deploying a task force to Coco Solo. Organized around one of the companies of the 2-9 IN, Task Force Automatic was comprised of infantry, military police and signal elements under an artillery headquarters.

Deploying to Coco Solo posed significant challenges. Ground transportation along the sole route across the northwestern end of the Canal was the most dangerous but offered a way to deploy the entire Task Force. Airlift was much safer; however, many of the vehicles couldn't be moved by helicopter. Movement across Limon Bay by landing craft offered a means of transporting all personnel and equipment, but landing conditions at Coco Solo would slow the deployment and expose the Task Force unnecessarily.

Lieutenant Colonel Baltimore's staff selected a combination of all three modes of transportation. Their well-coordinated air, land and sea movement achieved tactical surprise by placing American troops in an unexpected location and demonstrated a capability to rapidly evacuate military families or reinforce Coco Solo by sea and air.

Political Considerations

The political aspects of peacetime contingency operations were a major consideration for Task Force Automatic. The Task Force occupied a vacant wing of the Cristobal High School in Coco Solo adjacent to the PDF Naval-Infantry Company.

The Treaty didn't allow American troops to patrol in the military areas of coordination. However, Task Force Atlantic elements at Fort Espinar discovered that orientation walks to familiarize soldiers with the limits of the boundaries of the American and Panamanian areas were permitted. Lieutenant Colonel Baltimore immediately adopted this policy with

two or three groups of soldiers participating in familiarization walks through the Coco Solo housing area each day and night. These groups always traveled with their full combat load.

The Treaty also prohibited certain forms of training in the military area of coordination. The airlift of a howitzer into Coco Solo to fire a Fourth of July salute, the rapid and coordinated exploration of an abandoned elementary school and other innovative activities drew significant PDF attention and demonstrated important capabilities. The performance of TF Automatic showed that an artillery headquarters can execute a wide variety of LIC missions.

Personnel Turnovers

Lieutenant Colonel Baltimore's headquarters demonstrated its flexibility and professionalism in other ways. During the five months he and his staff remained in Panama, the Executive Officer, Regimental Fire Support Officer, Command Sergeant Major, S1, S2 and S4 changed through normal rotation. These changes didn't degrade Task Force operations. The battalion also operated a functional staff at Fort Ord where two to three batteries were on the ground at any one time.

Battery Operations

The Bravo Battery Commander, Captain William F. Adams, also found the situation in Panama unique and challenging. His previous training included a rotation to the Joint Readiness Training Center (JRTC), Fort Chaffee, Arkansas, which concentrated on low- to mid-intensity conflict. At the JRTC and during other exercises, the focus was on generating and conserving combat power.

Firepower. However, there were important distinctions between the LIC operations of the JRTC and military operations short of war in Panama. The role of firepower, one of the elements of combat power identified by *FM 100-5 Operations*, demonstrates the difference clearly. Bravo Battery maintained a high level of combat readiness, but during security enhancement operations, it wasn't required to *deliver firepower*. Where mid- to high-intensity conflict is the expression of firepower, Bravo

Battery's role in LIC was only to *maintain and demonstrate the capability of delivering firepower*.

Maneuver. A second element of combat power, maneuver also was unique in this LIC operation. Task Force Atlantic's tactical maneuver was limited by the mission and situation. Infantry companies deployed forward to Fort Espinar and Coco Solo (where US citizens lived close to PDF units) were vulnerable to a number of threats.

A three-gun platoon deployed by helicopter to Fort Davis on 17 May, and TF Atlantic extended its artillery coverage to include all units and facilities threatened in the area of operations. The platoons also supported the freedom of movement convoys along the main and Transisthmian Highways.

Captain Adams placed the Davis platoon on 24-hour-a-day duty with one section prepared to fire in two minutes or less. The Fort Sherman platoon was on 30-minute alert along with the 2-8 FA's Q-36 Firefinder Radar Section there. From these two locations, the 2-8 FA provided effective fire support for TF Atlantic's limited forms of maneuver.

Force Protection. A third aspect of combat power, force protection, provided further distinction between operations in LIC and mid- to high-intensity conflict. Task force units faced their greatest threat during ground movement. Fortifying artillery positions offered greater protection than moving frequently, lessened the threat to nearby noncombatants and reduced requirements for infantry security. The platoons constructed fire bases at Forts Sherman and Davis to protect personnel, equipment and ammunition.

The majority of the Battery's training had emphasized frequent displacements for mid- to high-intensity conflict scenarios. Fortunately, Captain Adams had led a 2-8 FA officers' discussion of Vietnam-era fire bases earlier in the year, and the Battery had constructed similar bases during survivability training in California. These experiences helped prepare it to build and operate out of fire bases.

Leadership. The most important aspect of combat power, leadership also was unique in this LIC operation. Sustained independent platoon operations,

central to mission execution, significantly challenged the Battery leadership. Captain Adams organized his platoons into two balanced firing elements, which operated separately for more than 70 days until relieved by C Battery, 2-8 FA at the end of July. (Charlie Battery also conducted approximately 70 days of independent platoon operations.)

While common in heavy artillery battalions, extended split-battery operations aren't practiced by light artillery because of its austere force structure. Extended, independent platoon operations with a 65- to 70-man battery required great maturity and professionalism in the young lieutenants and junior NCOs. Both batteries benefited from this excellent leadership experience.

Training. Training played an extremely important role in Operation Nimrod Dancer. Acclimation to and familiarization with jungle operations were important, but training was most critical in sustaining wartime skills and as a form of deterrence.

The superb level of training of light forces is dependent upon perishable combat skills. Unfortunately, daily security operations provided no training in live-firing and only limited opportunities to conduct air movements and other critical combat tasks. Captain Adams, together with Battalion and Regimental fire support officers, organized numerous live-fire exercises and airlifts to sustain the training of the Battery. By the end of July, the platoons and the Radar Section had conducted more than 20 separate airmobile operations. Many of the airlifts were in conjunction with live-fire exercises, both day and night.

Unconventional training sites supplemented the standard ranges and firing points. Two of the locations, one along the Caribbean coast in the north and the other beside Gatun Dam, offered unique opportunities to publicly demonstrate the capabilities of the artillery platoons, mortars and attack helicopters.

At these locations and at the standard firing points, the professionalism and discipline of the soldiers conveyed as much to civilians, PDF military police and, ultimately, to the PDF leadership as the quality of the fires. The value of training as a deterrent and a means of sustaining

combat skills proved essential for success in this low-intensity conflict.

Solid training and discipline will remain critical aspects of LIC operations. Our abilities to respond rapidly to threats to US interests, to publicly demonstrate excellence in combat skills and to show patience and professionalism under stress strengthened deterrence. Critical combat skills, which may not be required by the elements of METT-T, will atrophy if not exercised. Moreover, the training required to sustain these skills increases the command's ability to generate combat power and enhance the deterrent value of the entire force.

Conclusion

Security operations in Panama provide insight into future light artillery operations. While we'll continue to train for mid- to high-intensity conflict, future international tensions most certainly will result in our employing light forces in LIC, and light artillery will continue to perform LIC missions.

The factors of METT-T in Panama dictated a non-standard mission for TF Automatic during Operation Nimrod Dancer. Artillerymen must consider potential LIC missions in doctrine, training and preparation for war. If they fail to make them part of their mission-essential task list (METL), they may be unprepared for the role they'll play in future LIC operations.



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Major (P) Robert J. Reese is the Executive Officer for the 2d Battalion, 8th Field Artillery. During Operation

Nimrod Dancer, he served as the Fire Support Officer (FSO) for the 9th Regimental Combat Team. Major Reese is a graduate of the Command and General Staff College and School of Advanced Military Studies, both at Fort Leavenworth, Kansas, and he holds a master's degree from the Naval Postgraduate School, Monterey, California. Previous assignments include serving as a forward observer and battalion FSO in the 9th Infantry Division (Motorized), detachment commander in the 570th Artillery Group, West Germany, and G3 Plans Officer in the 7th Infantry Division (Light).



1LT William Rast

The Redleg

I'm a Redleg from head to toe,
And there ain't a place that I won't go.
I've been rained on, snowed on, Cold and wet,

And madder than Hell
At a camouflage net.

I've seen dust so thick
It'll turn a black man white,
And mud so deep
It'll sink a truck from sight,
Rain so hard
It'll beat you half to death,
And sun that will make you beg
For breath.

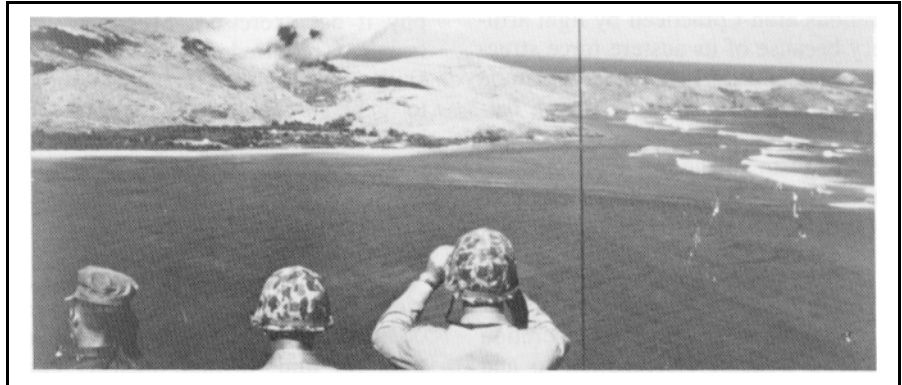
I've humped big chunks of steel, About
200 pounds,
From when the sun came up
'Til the sun went down.

I'm asked over and over,
How could you love it?
I tell them I'm a Redleg
And damn proud of it.

SFC James D. Denham
Field Artillery NCO Academy
Fort Sill, OK

The ANGLICO Edge

by Major Zachary P. Hubbard



The air and naval gunfire liaison company (ANGLICO) is one of the most unique and least understood organizations in the United States Marine Corps. It evolved from assault signal companies of World War II. These units, comprised of US Marine and Navy personnel, were organized into naval gunfire, air liaison and shore-party communications teams to support Marine units during amphibious assaults.

Similar units, called joint assault signal companies (JASCOS), were organized to support Navy-Army operations. In 1947, the Joint Chiefs of Staff (JCS) eliminated JASCOS and shifted all JASCO responsibilities to the Navy. In 1949, the Marine Corps formed the ANGLICO to support both Navy-Marine Corps and Navy-Army operations. Since then, ANGLICO units have seen action in Korea, Lebanon, Cuba, Vietnam, Grenada and the Middle East.

Mission

Regardless of the time, place or level of conflict, the ANGLICO mission statement remains the same:

To provide ground control and liaison agencies for the planning and employment of naval gunfire and US Navy/United States Marine Corps close air support (CAS), for allied or US Army forces of division size or less operating alongside a Marine Air-Ground Task Force (MAGTF) in joint or combined operations; or in other operations where other than Fleet Marine Forces (FMFs) are provided US naval gunfire and naval air support.

There are currently four ANGLICOs in the Marine Corps: two active-duty and two reserve. The First ANGLICO at Camp Pendleton, California, is under the operational control of the Fleet Marine Force, Pacific. The Second ANGLICO at Camp Lejeune, North Carolina, is under the operational control of the Second Surveillance, Reconnaissance and Intelligence Group, subordinate to the Fleet Marine Force, Atlantic. The Third and Fourth ANGLICOs, both reserve units under the 4th Marine Division, are at Long Beach, California, and West Palm Beach, Florida, respectively. Their missions are virtually identical, varying only in the units supported and geographic areas of operation.

The ANGLICO units routinely work with the US Army, NATO forces and other allied nations around the globe. Support for the US Army is primarily for the 75th Ranger Regiment at Fort Benning, Georgia, the 82d Airborne Division at Fort Bragg, North Carolina, and the 101st Airborne (Air Assault) Division at Fort Campbell, Kentucky. The ANGLICO personnel take pride in their ability to operate with these and any other light forces.

Training

To maintain this capability, ANGLICO units stay proficient in a number of tactical insertion methods. Static-line parachuting is the primary method; however, rappelling, fast roping, combat rubber-raiding-craft operations and special patrol insertion-extraction (SPIE) are all possibilities. (The SPIE rigging entails extracting or inserting personnel attached in a series to a rope slung beneath a helicopter. It's used when terrain or vegetation prevents the helicopter from landing.) In addition, First and Second ANGLICOs are currently developing a military free-fall parachuting capability to support certain special operations missions. These insertion techniques, combined with extensive patrolling, load-bearing marches, land navigation and training in climates

ranging from the arctic to the tropics, give the ANGLICO the ability to enter and move with any supported force.

Formal schooling plays a large role in ANGLICO training. Before qualifying for duty on an operational team, each ANGLICO member must have three to four months of training. Basic airborne qualification is first and foremost. Figure 1 shows the required and advanced schools for ANGLICO members.



A US Marine rappels with a British Royal Marine during exercise Burmese Chase in 1989.



An ANGLICO Team Insertion by "Gemini" Boat into Northern Scotland

ANGLICO Schools

Required

- Basic Airborne
- Tactical Air Control Party Course
- Naval Gunfire Liaison Officers Course
- Naval Gunfire Spotters Course
- Amphibious Reconnaissance Course
- Winter/Summer Mountain Leader Course

Advanced

- Static Line Jumpmaster
- Pathfinder
- Ranger
- Military Free-Fall Parachutist

Figure 1. Required and Advanced Courses for ANGLICO Team Members

Organization

The designation of an ANGLICO as a company is a misnomer. An ANGLICO is organized as a separate battalion and commanded by an infantry lieutenant colonel. (See Figure 2.) The three subordinate-brigade platoon commanders are majors who are naval aviators or naval flight officers. An ANGLICO has no S2 section, since intelligence is provided by the supported unit.

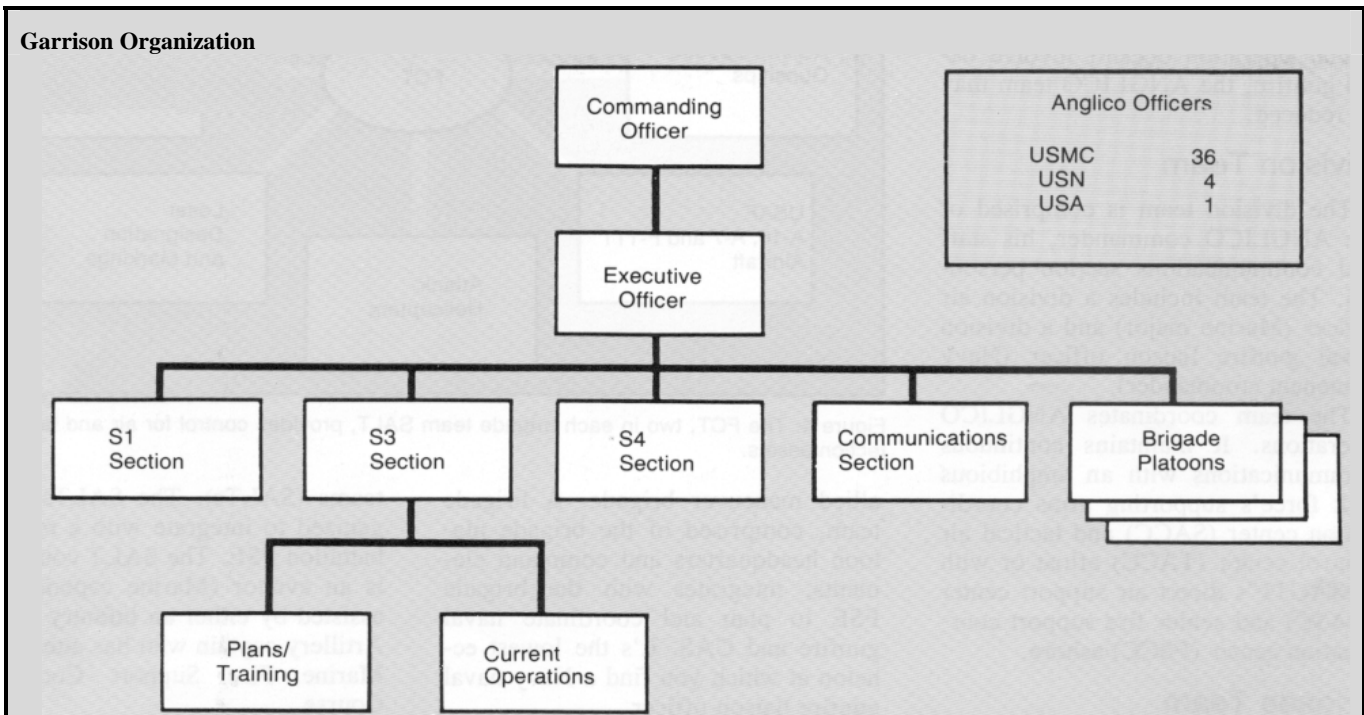


Figure 2: In garrison, the ANGLICO (a misnomer as a company) is organized as a separate battalion.

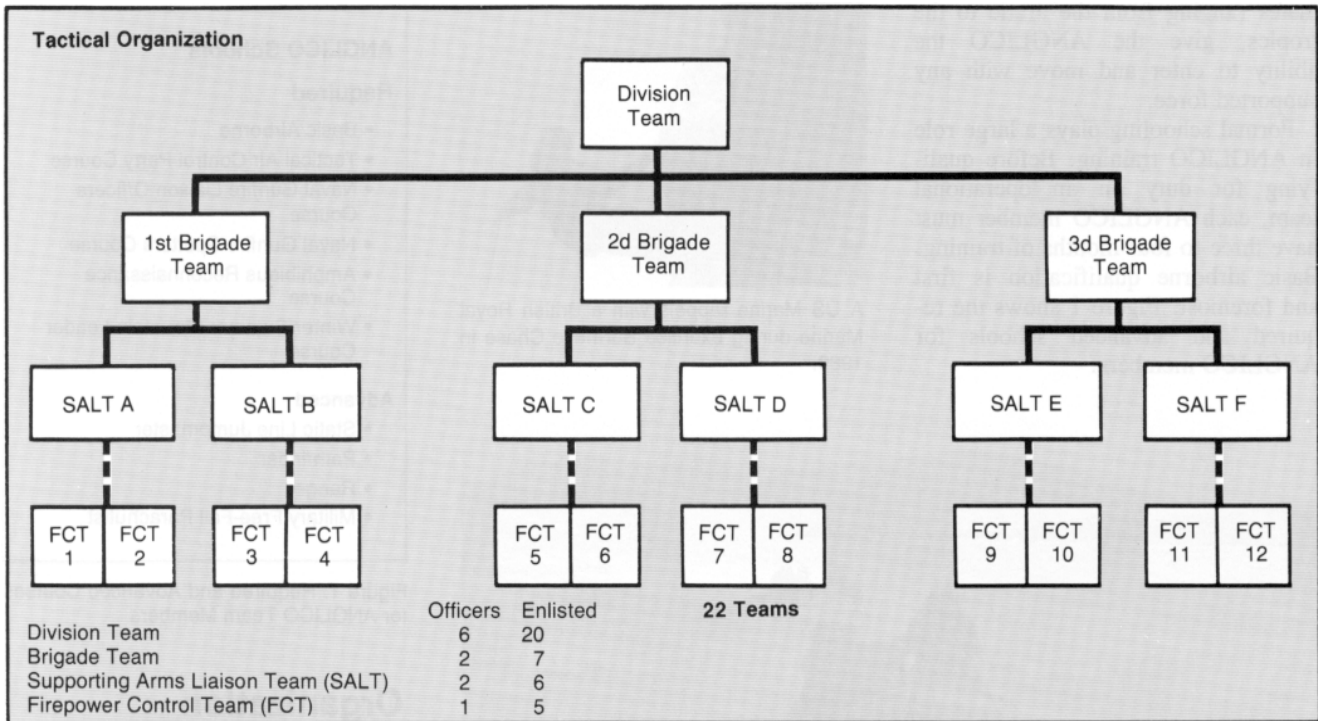


Figure 3: When task organized, ANGLICO teams integrate with FSEs from the division to the battery levels to plan and control naval gunfire and CAS.

The garrison organization differs considerably from the way ANGLICO units task organize to support tactical operations. (See Figure 3.) When task organized, ANGLICO operational teams integrate with fire support elements (FSEs) from the division to battalion levels and control naval gunfire and CAS. If a particular operation doesn't involve naval gunfire, the ANGLICO team may be reduced.

Division Team

The division team is comprised of the ANGLICO commander, his staff and communications section personnel. The team includes a division air officer (Marine major) and a division naval gunfire liaison officer (Navy lieutenant commander).

The team coordinates ANGLICO operations. It maintains continuous communications with an amphibious task force's supporting arms coordination center (SACC) and tactical air control center (TACC) afloat or with a MAGTF's direct air support center (DASC) and senior fire support coordination center (FSCC) ashore.

Brigade Team

The ANGLICO brigade platoons task organize to support an Army or

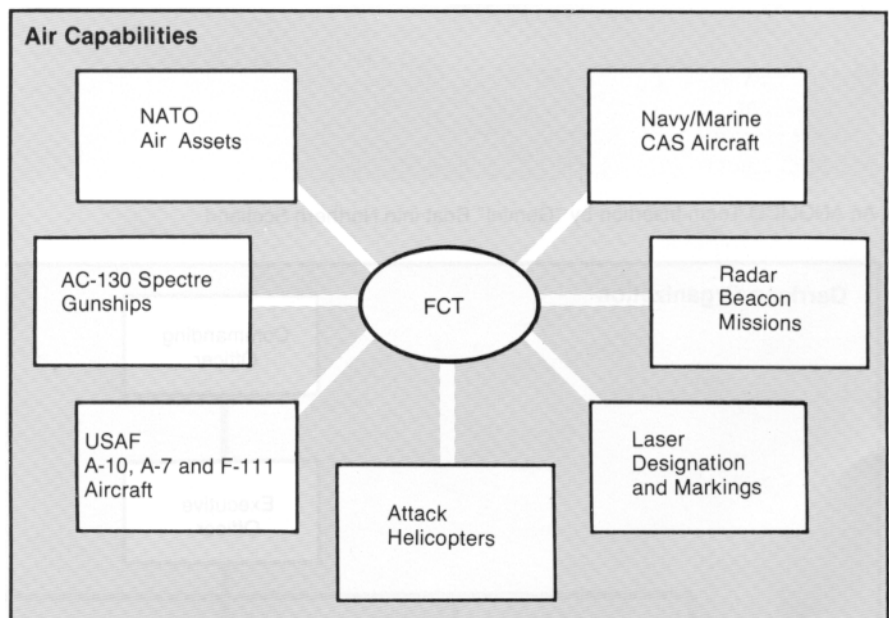


Figure 4: The FCT, two in each brigade team SALT, provides control for air and target detection assets.

allied maneuver brigade. A brigade team, comprised of the brigade platoon headquarters and command elements, integrates with the brigade FSE to plan and coordinate naval gunfire and CAS. It's the lowest echelon at which you find a Navy naval gunfire liaison officer.

SALT. Subordinate to each brigade team are two supporting arms liaison

teams (SALTs). The SALTs are organized to integrate with a maneuver battalion FSE. The SALT commander is an aviator (Marine captain). He's assisted by either an infantry or Field Artillery captain who has attended the Marine Fire Support Coordinator Course.

FCT. Subordinate to each SALT are two firepower control teams (FCTs).

The FCTs provide control for and observe CAS and naval gunfire. The FCT officer's title is Firepower Controller—a Field Artillery lieutenant trained as a universal spotter, meaning he can control *all* supporting arms. A FCT team provides naval gunfire spotter services, observation for Field Artillery and mortars and control of any form of CAS, both US and allied. (See Figure 4).

As there are only two FCTs to support the maneuver companies in a battalion, it's often advisable to allocate FCT teams to two companies and an Air Force tactical air control party to the third. This gives each maneuver company the ability to control CAS in its respective area of operation.

Communications. The key to success for ANGLICO operations is *communications*. Consequently, communicators comprise a large segment of ANGLICO operational teams.

All operational team personnel are trained in HF, VHF and UHF communications techniques and equipment with particular emphasis on using field-expedient antennas. Typical training leaves all manufactured HF and VHF antennas in garrison during a field exercise and relies entirely on expedient antennas.

Maneuver commanders often find when all organic communications fail, the ANGLICO can provide reliable back-up communications links to subordinate maneuver elements. Each member of an ANGLICO team will carry at least one radio or radar beacon during tactical operations.

Operations

As our military concerns turn toward low-intensity conflict and counterinsurgency operations, ANGLICO units become tools of diplomacy. Small, widely dispersed teams working with an ally's ground forces can project decisive volumes of carrier-based CAS and naval gunfire while minimizing the number of US ground forces involved. This not only reduces the risk of losing American lives, but also minimizes the political problems involved with introducing large numbers of US forces on foreign soil.

Including ANGLICO teams in any operation provides a combat multiplier.

Besides supporting the main battle area, ANGLICO teams may support deep reconnaissance patrols, advance and pre-assault forces in amphibious operations and special operations forces. Nevertheless, the ANGLICO mission remains the same in all instances—to plan and control CAS and naval gunfire.

Typical missions for ANGLICO teams supporting these forces include establishing remote observation posts, participating in Ranger combat observation lasing team (COLT) missions, directing laser CAS missions, controlling AC-130 gunships and directing night CAS missions using the PPN-19 radar beacon in conjunction with A-6E aircraft.

Planning

The ANGLICO support is a scarce commodity that requires early planning and wise coordination. The First and Second ANGLICOs maintain teams afloat on a continuous basis with Marine expeditionary units (special operations capable) or MEU (SOC). Due to this standing commitment and other training with allied countries requiring deployment of teams outside of the continental US, an ANGLICO can provide a division team and one to two brigade platoons to a US Army division at any given time. Therefore, we cross-train ANGLICO headquarters personnel to augment brigade platoons.

In the event of hostilities, a reserve



Personnel of the 2d ANGLICO operate the AN/GRC-9 "Angry Nine" naval gunfire radio in Turkey just before they land in Lebanon in July 1958.

ANGLICO can reinforce an active-duty ANGLICO or assume a mission of its own. However, reserve ANGLICO units don't train for special operations.

The responsibility for planning ANGLICO employment in US Army operations rests with the Field Artillery community. It's the knowledge of fire support officers (FSOs), particularly



Marines of the 2d ANGLICO jump into Loch Eribol, Scotland, in July 1989.



at the brigade and battalion levels, that will determine the success of ANGLICO operations.

The ANGLICO teams are fire support coordination agencies. As such, the responsible FSO at each level must ensure the ANGLICO team attached to his unit is fully integrated into FSE operations. Particularly at the battalion level, ANGLICO team members can augment the FSE in planning for organic fire support in addition to naval gunfire and CAS.

The ANGLICO SALT personnel are skilled fire planners who can greatly enhance a battalion FSO's ability to plan and execute both mortar and artillery fires. An FSO who doesn't understand ANGLICO employment won't reap the full benefits of the edge the ANGLICO can provide his supported maneuver force.

The ANGLICO planners are essential to the development of any plan involving or having the potential for involving naval gunfire or naval air support. The ANGLICO planners are requested through the G3 of the respective FMF headquarters. As plans evolve, they specify the ANGLICO that will support the operation and the size and composition of the ANGLICO teams involved. Items requiring consideration early in the planning process include allocation of aircraft seats to ANGLICO personnel, heavy drop of ANGLICO vehicles, inclusion of ANGLICO teams in communications planning and resupply of batteries for ANGLICO communications equipment.

Support

Inter-service support agreements (ISSAs) are essential to integrating ANGLICO support into operation plans. The agreements specify in detail



An ANGLICO team member crosses a rope bridge in training at Camp LeJeune, North Carolina.

the logistical support US Army units must provide accompanying ANGLICO teams. The ISSAs address both training and contingency operations.

Usually, ANGLICO teams deploy with only individual weapons, personal nuclear, biological and chemical (NBC) gear and field gear; the vehicles, radios, and communications security (COMSEC) software necessary to accomplish the mission; and a 72-hour supply of Class I and radio batteries. From the beginning of an operation or exercise, the supported US Army unit must provide all other classes of supply and support, to include medical support and maintenance of common equipment. After the initial 72 hours, the Army is responsible for virtually all support to accompanying ANGLICO teams. Obviously, ISSAs require a lot of detail and coordination and are extremely important.

Future Operations

From the JASCOS of World War II to the ANGLICOs of today, little has really changed. But what about the future?

Recent developments in the Warsaw Pact indicate a decreased likelihood of war in Europe. As the threat of war with the Warsaw Pact decreases, the importance of ANGLICOs increases. With military attention turning toward Central America, South America and counternarcotics, the special capabilities of these units may prove invaluable.

The possibilities for ANGLICO employment are limited only by the imagination. Before organic fire support is established in an area of operations, an ANGLICO can provide access to devastating air and sea firepower that can respond rapidly to the maneuver commander. Once organic firepower is firmly established, ANGLICO personnel can coordinate and control that firepower while continuing to direct naval firepower against the enemy. The ANGLICO teams can operate in any environment alongside any US Army force during any phase of an operation.

We, as Field Artillerymen, hold the key to providing the ANGLICO edge. We must master the employment of our ANGLICOs to ensure the continuing availability of *Lightning from the Sky and Thunder from the Sea.*



Major Zachary P. Hubbard, US Army, is the S3 of the Second Air and Naval Gunfire Liaison Company (ANGLICO) at Camp Lejeune, North Carolina. He has been the S3 since August 1988 in an exchange between the Fleet Marine Force, Atlantic, and the 75th Ranger Regiment, Fort Benning, Georgia. Major Hubbard's previous assignments include battery command in the 3d Battalion, 3d Field Artillery, 194th Separate Armored Brigade, Fort Knox, Kentucky; and Deputy G2, Fire Direction Officer for the 4th Battalion, 3d Field Artillery, and Brigade Fire Support Officer, in the 2d Armored Division (Forward), West Germany. Among others, he's a graduate of the USMC Tactical Air Control Course.



The Battle for Jaffna: **Artillery Lessons Learned**

by Captains Anthony M. Schilling, MP,
and Donald R. Sims, MI

In October 1987, Indian military forces deployed in Sri Lanka became engaged in a military confrontation with Tamil separatists. From the onset, the Indian Peacekeeping Force (IPKF), attempting to seize the city of Jaffna in northern Sri Lanka, suffered severe battlefield setbacks. These were due in no small

part to their inadequate use of fire support assets. Artillerymen serving as peacekeepers in such diverse places as Cyprus, Namibia, Lebanon and the Sinai can learn from the Indian ordeal in Sri Lanka.

Background

Pressure from its own Tamil population to prevent the "extermination" of the Sri Lankan Tamils induced the Indian government to sign a peace accord with Sri Lanka on 29 July 1987. This accord called for India to deploy a peacekeeping force to separate the Sri Lankan Army and the Liberation Tigers of Tamil Eelam (LTTE). The LTTE had been involved in a four-year struggle with the government to form a separate Tamil state. (See Figure 1.)

On 30 July, India, not anticipating military action, deployed a 3,000-man light infantry peacekeeping force by air from Delhi to the Jaffna Peninsula. Left behind were their artillery, heavy mortars, attack helicopters and close air support aircraft.

Under the terms of the agreement, the Sri Lankan Army left the area. The agreement also called for the LTTE to turn over its weapons to the IPKF, after which the Sri Lankan government would grant them amnesty. The LTTE, however, surrendered few weapons, and those

they gave up were old or inoperative. The LTTE later used its weapons first against other Tamil separatist groups and then against the IPKF itself.

The IPKF soon ran into problems that arose from the Indian Army's preconceived notions that the Sri Lankan military had been indiscriminately harassing and killing Tamils. This distorted the IPKF's perception of the Sri Lankan Army. Despite good liaison with the Sri Lankan Army, the IPKF ignored its briefings about the terrain, potential enemy forces and operational considerations.

The IPKF attempted to establish good relations with the LTTE. It invited LTTE leaders to meetings at its bases and to view its equipment. However, the LTTE used this time to collect intelligence, gathering information about the IPKF organization, equipment, training and weaknesses.

On 5 October 1987, 11 key members of the LTTE, apparently under Indian Army protection, committed suicide at the Palaly Military Airfield on the Jaffna Peninsula using cyanide capsules. The deaths led to a retaliation by the LTTE, and on the same day, 14 Sri Lankans were killed, to include eight soldiers held prisoner since March 1987.

The IPKF began to "crack down" on the LTTE after a series of attacks

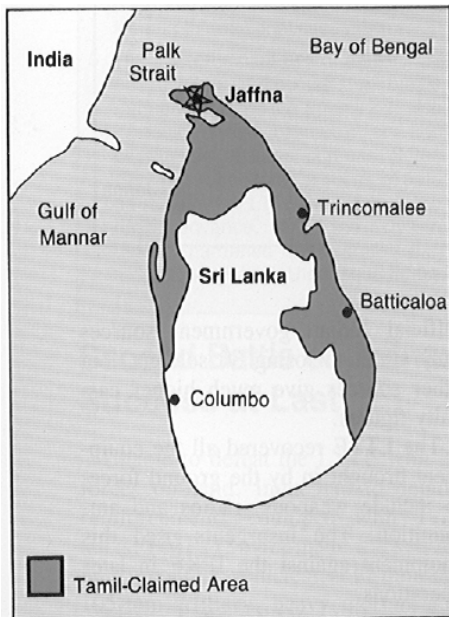


Figure 1: When the IPKF arrived, the LTTE had been involved in a four-year struggle with the Sri Lankan government to form a separate Tamil state.

left hundreds of Sri Lankans dead or wounded, mostly civilians. The Indian government now found itself in armed conflict with the LTTE.

First Battle of Jaffna: Massacre at the University

The IPKF, sent to Sri Lanka as peacekeepers, was totally unprepared to battle the LTTE. The forces initially deployed were conventional infantry troops with little or no training in unconventional warfare, military operations on urban terrain (MOUT) or jungle operations. It arrived in Sri Lanka with no artillery or armor support. It failed to listen to Sri Lankan intelligence briefers on the tactical situation and drastically underestimated the task facing it.

The IPKF planned to seize the University of Jaffna in a coup de main. The operation would serve two purposes. First, it would eliminate the LTTE headquarters for the entire Northern Province. Second, it would allow the IPKF to link-up with a small force cornered in Fort Jaffna. It was planned as a two-prong attack using two understrength dismounted infantry battalions, each reinforced with one BMP-2 platoon. In addition, a company (-) was to be inserted by helicopter directly onto the objective. (See Figure 2.) The operation emphasized speed and surprise at the cost of firepower, mobility and planning.

On 10 October 1987, the IPKF began its first large-scale military operation against the Tamil insurgents. It began well. The two infantry battalions marched down the main road leading toward the University, almost 10 miles away. After covering seven miles, these units, equipped only with light weapons, were attacked by the LTTE on all sides and immediately pinned down.

The IPKF staged the air assault operation from the Palaly Military Airfield using three MI-8 troop helicopters. The objective was an open field adjacent to the LTTE headquarters dominated by several surrounding multi-story buildings. The IPKF didn't reconnoiter the objective to determine the presence or strength of nearby enemy forces. In addition, the force lifted off without preparatory fires on the landing zone (LZ) and



Indian soldiers arrive in Sri Lanka in August 1987 to help enforce the surrender of arms by Tamil militants.

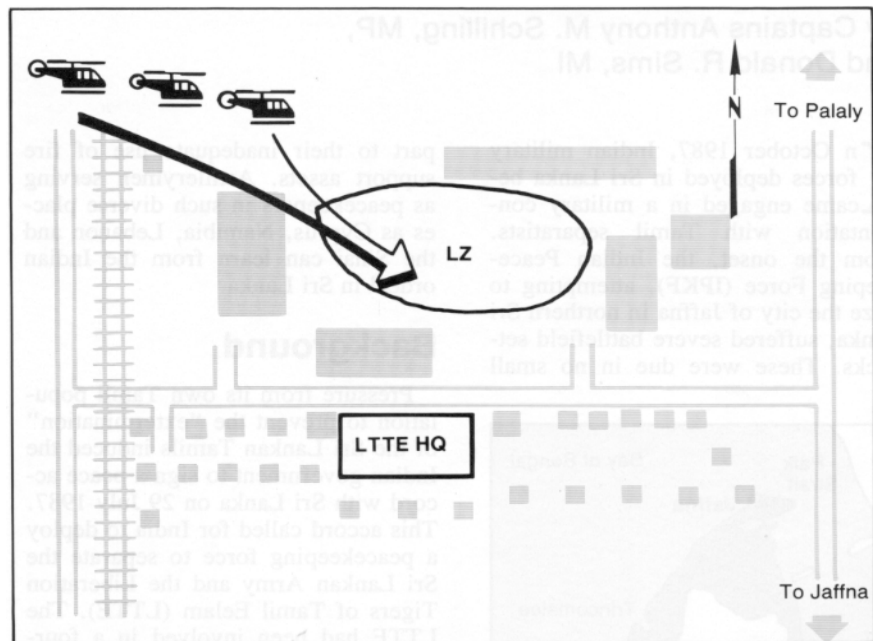


Figure 2: The First Battle of Jaffna—The IPKF Air Assault at Jaffna University

without being escorted by helicopter gunships or aircraft.

As the helicopters landed on the LZ, they came under heavy and accurate fire by .50 caliber machineguns, RPG-7s (rocket propelled grenades), SA-7s (shoulder-fired surface-to-air missiles) and automatic weapons from windows and prepared positions that covered the LZ. Having no available fire support assets in Sri Lanka, the 70 or so soldiers of the air assault force never had a chance—they all died on the LZ. The MI-8 lift helicopters escaped with heavy damage.

Official Indian government sources only admit to losing 30 soldiers, but other sources give much higher casualty figures.

The LTTE recovered all the equipment brought in by the ground force, to include weapons, radios and ammunition. The insurgents used this equipment against the IPKF in later operations.

The tragedy didn't end there. The infantry battalions, still attempting to fight through to the University, continued to suffer heavy casualties. A battalion commander was killed

attempting to fight through to the air assault force. The IPKF, which had advanced quickly, took more than eight hours to return to its own lines, suffering heavy casualties in the process.

Lessons Learned in Sri Lanka

1. The IPKF wasn't prepared for its role. Not expecting to be involved in combat, it arrived without adequate armor, artillery or close air support.
2. The LTTE easily could gather information on IPKF strengths and weaknesses. The LTTE learned the weak points of the T-72 and the shortfalls of the IPKF—heavy reliance on roads and little MOUT training or jungle warfare experience.
3. The Indian Army underestimated the strength, motivation and combat experience of the LTTE. It failed to conduct an adequate intelligence preparation of the battlefield (IPB) and committed unprepared troops to combat. This lack of knowledge of the enemy and terrain were key factors in the disaster in the first battle of Jaffna. The lack of air or artillery support, poor planning, inexperience and an underestimation of the LTTE all contributed to the initial setback. The presence of artillery and attack helicopters would have made it possible for the IPKF to prep the LZ and to provide indirect fire support for the advancing infantry columns.
4. The IPKF committed forces to the battle almost straight off the aircraft. As the combat intensified, troops arrived and went into battle piecemeal, leading to additional casualties.
5. The indiscriminate use of artillery later resulted in successful breakthroughs against the enemy but also in heavy civilian casualties and the destruction of large portions of the city. The rubble of sections of Jaffna aided the LTTE in slowing the IPKF advance, and the civilian deaths hardened the Tamils' attitudes toward their Indian "saviors."

Second Battle of Jaffna: Success at Last

Unable to defeat the LTTE with its forces on-hand, India had to deploy reinforcements equipped with T-72 tanks, BMPs (Soviet-made tracked infantry combat vehicles), 130-mm and 105-mm artillery, heavy mortars and attack-aviation assets to the Jaffna Peninsula. India's largely Soviet-made air transport fleet brought most of these assets to Palaly Airfield. From the Airfield, most of these assets

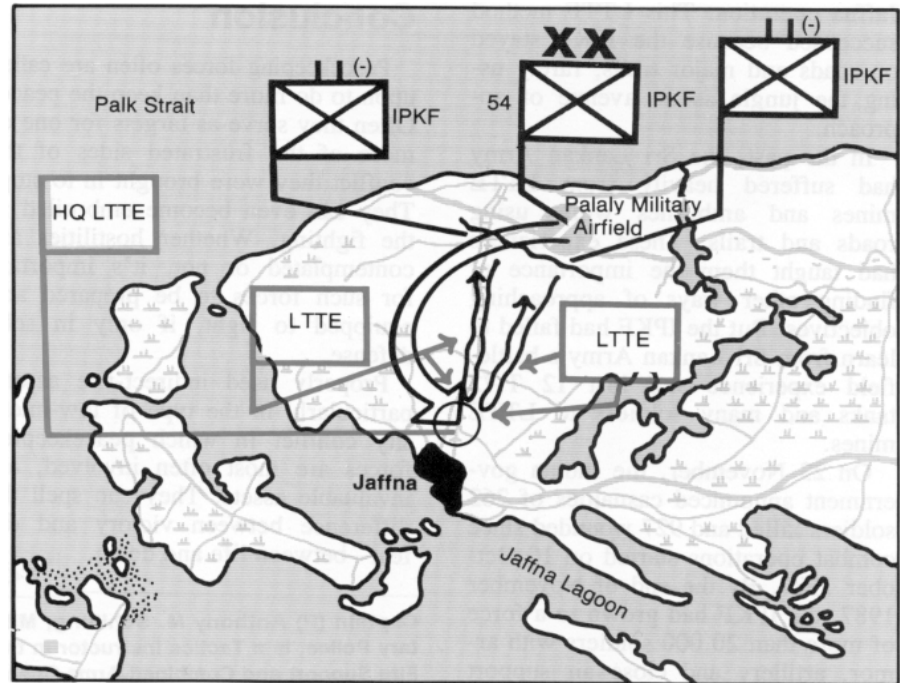


Figure 3: Second Battle of Jaffna. Despite its superiority in firepower, it took the 6,000-man IPKF two and one-half weeks to defeat the 2,500-man LTTE.



Indian 130-mm self-propelled guns move through the Independence Day Parade at Rawalpindi, 23 March 1987.

went into combat with little or no preparation.

Four days later, the IPKF then renewed its attack on Jaffna. It began with a conventional frontal attack using artillery, mortars, MI-24 gunships and tanks to roll over the LTTE in steam-roller fashion.

Elements of the 18th, 41st, 72d, 91st and 115th Brigades, under the command of General Harkirat Singh, attacked on four axes of advance toward Jaffna. Artillery fired to prep LZs, break up enemy concentrations and provide battlefield obscuration and suppression. The artillery employment was key in breaking through the LTTE lines.

The IPKF units, upon encountering opposition, called for artillery fire

that was delivered in an indiscriminate manner. This inaccuracy did open gaps in the LTTE lines. But it also caused more than 1,000 civilian casualties and created 25,000 homeless refugees after the battle.

Despite its superiority in firepower, it took the IPKF, using a 6,000-man combat force, two and one-half weeks to defeat the 2,500 LTTE defenders. The Indian Army finally took Jaffna on 25 October 1987, reporting only 169 IPKF casualties during these battles. The IPKF reported 670 LTTE casualties, whom the LTTE claims were mostly civilians.

The IPKF suffered heavily from the LTTE use of anti-personnel and antitank mines. One mine explosion killed 20 Indian soldiers during the

Jaffna operation. This LTTE method succeeded because the IPKF stayed on roads and major trails, rarely using the jungle as an avenue of approach.

In the past, the Sri Lankan Army had suffered heavily from LTTE mines and ambushes while using roads and trails. These experiences had taught them the importance of finding other ways of approaching objectives. But the IPKF had failed to learn from Sri Lankan Army's battlefield experience and lost 12 T-72 tanks and many soldiers to LTTE mines.

On 23 November, the Indian government announced casualties of 262 soldiers killed and 927 wounded since combat operations started on 10 October 1987. By the end of November 1987, the IPKF had grown to a force of more than 20,000 soldiers with armor, artillery and close air support available.

Conclusion

Peacekeeping forces often are called upon to do more than keep the peace. Often they serve as targets for one or more of the frustrated sides of the conflict they were brought in to stop. They can even become embroiled in the fighting. Whether hostilities are contemplated or not, it's important for such forces to be prepared and equipped to fight, if only in self-defense.

Properly used indirect-fire assets, particularly in the type of low-intensity conflict in which peacekeeping forces are most often involved, are invaluable assets. They can spell the difference between victory and defeat—between life and death.



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NOTES FROM UNITS

Tropic Thunder Light Fighters in Kangaroo 89

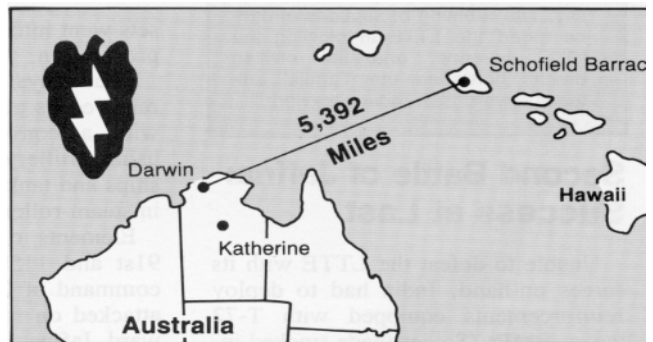
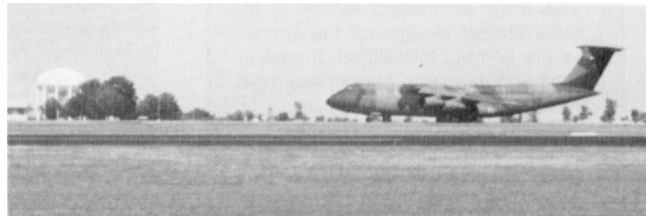
"G'day, Mate" was the frequent greeting passed between the Australian Army's 4th Field Regiment gunners and soldiers of the 1st Battalion, 8th Field Artillery, the M198 "Automatic Eighth," of the 25th Infantry Division (Light), Hawaii, during Kangaroo 89. It was the largest joint training exercise in Australia since World War II.

The Tropic Lightning Light Fighters joined soldiers of Australia's 1st Division in the outback of the Northern Territory of Australia with approximately 23,000 other soldiers, sailors and airmen. The 30-day exercise tested the Australian Defense Plan and teamed Australians with Americans to battle the fictitious Kamarians. They consisted of the Australian Special Action Service (SAS) and US Army Special Forces, an insurgent force that threatened the Territory's stability.

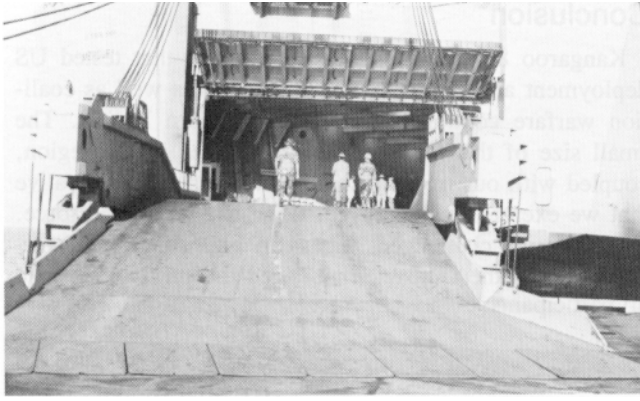
Deployment and Operations

Ninety-nine soldiers from the Automatic Eighth's Bravo Battery, under the command of Captain Daniel Micek, deployed to the "Land Down Under" by sea and air. The Battery was part of Task Force Catamount, named for the 4th Battalion, 87th Infantry, which spearheaded the Tropic Lightning's presence in Australia.

The Bravo Bulls' main body arrived in Darwin after a 15-hour C141 flight from Hawaii via Guam. It joined its equipment, which had arrived two days earlier by sea. A



quick refit was conducted, and Bravo was on the road in a seven-hour, 220 mile convoy south to the Northern Territory town of Katherine. Located near the Royal Australian Air Force airfield of Tindal, the Battery assumed its mission of direct support to the Aussie 3d Infantry Brigade as part of the Australian 4th Field Regiment.



Circular Defense

A circular defense was established around Katherine with battalion sectors of responsibility assigned to the Brigade's organic battalions and 4th Battalion, 87th Infantry. Artillery had to be positioned to allow for maximum support and flexibility for the maneuver element. The artillerymen often found themselves in a 6,400-mil coverage situation.

On many occasions, artillery fire bases were established as the infantry sought to ferret out the Kamarians. The concept of the operation was to find the enemy, fix him with artillery and air support and, ultimately, concentrate overwhelming maneuver forces and fires on his positions.

Rules of Engagement. The rules of engagement were rigidly followed as the political and military aspects of the exercise were tested. Strict adherence to the rules of engagement made clearances to fire slow and sometimes nonexistent—much as it was in Vietnam and is likely to be in future counterinsurgency operations.

Exchanges. The tactics to find, fix and concentrate forces and fires on the Kamarians continued to be used as the Brigade moved north 80 miles to Pine Creek and Mac-Donald Airfield, an abandoned World War II airstrip. During this time, the Australian and American units exchanged personnel. The exchanges fostered a spirit of camaraderie and professionalism as each army demonstrated its artillery prowess. Pride permeated the exercise as soldiers swapped stories and created new ones.

Survey Accuracy. Survey also became a catalyst for information and training exchanges among the exercise's artillerymen. US Artillery survey parties, equipped with the position and azimuth determining system (PADS), conducted survey for the entire combined artillery force. The Australians still depend on conventional survey, as well as the global positioning system (GPS). The PADS discovered an error of 150 x 100 meters in the data provided by the GPS, which had been used to establish survey control in the area. Needless to say, PADS was worth its weight in gold during the exercise.

M119 and M198 Compatibility. The utility of the M119 (British Light or Hammel Gun, as the Australians call it) and M198 proved to be very effective in counterinsurgency operations. The M119 provided durability and flexibility,

while the M198, with its extended range, added an umbrella of support that almost doubled that of its lighter counterpart. The 155-mm M198 also provided the maneuver commander a variety of munitions unavailable for the 105-mm howitzer.

The Australians have the M198 howitzer in their inventory, and two of these howitzers participated in the exercise. They have modified the trails of the howitzers to accommodate a folding wheel for added mobility and ease of movement of the 15,750-pound howitzer. The wheels are hinged and stored when the howitzer is being towed. As soon as the trails are split, the wheels are put in the down position.

Movement and Defense. Batteries moved an average of 100 kilometers per displacement over unimproved roads and were constantly required to maintain a 6,400-mil firing capability. The US artillery crews became very proficient in out-of-traverse missions.

Battery defenses, emphasizing survivability and individual soldier skills, proved paramount during the exercise. The Kamarians probed the batteries frequently, but each time alertness and soldier familiarity with individual and crew-served weapons repelled the attacks. Bravo Battery had PVS-5 night-vision devices and small unit transceivers. It also used wire to tie all fighting positions together. When not laid on priority targets, the howitzers were laid on primary avenues of approach into the battery area, with "Killer Junior" range cards prepared. The key to survivability was a coordinated defense using all weapons available.



Lessons Learned

The participating units experienced some problems and learned many lessons. One challenge that B Battery faced was aiming points for out-of-traverse missions.

The standing operating procedure (SOP) called for using a distant aiming point (DAP). Because of the flat terrain, there were no DAPs available. So aiming posts were moved to a position opposite the collimator to achieve a 6,400-mil capability.

The Battery also learned the importance of five-gallon fuel cans for resupply. These cans were the primary method of fuel resupply because of the long supply lines and a lack of fuel support.

Another lesson learned by the battery was the significance of updating declination constants. During one move, the declination constant changed 30 mils.

Something that might be of interest to M198 units is the problem the Battery had with howitzer recapped tires. Driving long distances on unimproved roads caused many flats and blowouts. After completing the exercise, the Battery had 10 unserviceable howitzer tires. Of those, five were recaps that had completely lost their treads.

Obstacle Reporting Using TACFIRE

Reporting obstacles is a subject seldom discussed by the artillery community. However, for a commander who has experienced having a motor convoy stopped by a road obstacle or has occupied a position and discovered it was a minefield, obstacle reporting is critical to combat operations. The purpose of this article is to outline a method for reporting obstacles.

Obstacle Reporting

The direct-support engineer unit emplaces friendly obstacles. After completing the obstacle, the engineer squad sends an obstacle report to its platoon headquarters. It then relays the report through the company and battalion to the assistant division engineer (ADE) at division G3. All reports are transmitted via FM radio over engineer radio nets. Any dissemination to a maneuver company, battalion, brigade or division artillery tactical operations center (TOC) is outside the usual reporting system and requires additional coordination by the engineers.

Maneuver units, not engineers, report enemy obstacles. After discovering enemy obstacles, a maneuver unit sends spot reports over the maneuver intelligence FM radio net. These reports are relayed through each layer of command until they reach the division G2. When engineers are tasked to clear enemy obstacles, they report these obstacles through the engineer chain of command. All other maneuver, division artillery and support units learn of these obstacles only by monitoring the brigade intelligence FM radio net.

Problems with Reporting

Because of reliance on voice FM radio communications and the necessity to relay reports at each level of command, obstacle reporting is a slow, tedious process. Reports may take a day or two to reach division level, only to be overcome by fast-moving battlefield events.

Lateral dissemination of time-critical data is poor and sometimes non-existent. Coverage of friendly obstacles by direct or indirect fires is negated by a failure to communicate.

Conclusion

Kangaroo 89 was a successful exercise that tested US deployment and employment capabilities as well as coalition warfare contingencies in the Southern Pacific. The small size of the contingent of US forces in the region, coupled with our treaty commitments, make it imperative that we exercise our ability to fight as a combined force. The exercise challenged American and Australian war-fighters, and the Outback challenged the survival skills of all participants.

LTC Ronnie W. Tucker, FA
Cdr, 1-8 FA
1LT Brett R. Wiggs, FA
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Fire support coordination at the brigade level and below must be linked directly with the brigade engineer effort. If fires are to be planned in support of a barrier plan, the artillery must know where friendly obstacles are. Similarly, if the enemy has emplaced obstacles on the battlefield, follow-on units must be aware of their location and type.

Reorganizing

To facilitate targeting and the brigade engineer effort, the 2d Brigade, 2d Infantry Division, South Korea, combined the Brigade fire support element (FSE) and the Brigade engineer section into one common FSE. By operating in one vehicle as part of the Brigade TOC, each element complements the other's operation. Critical information regarding friendly obstacles arrives at the Brigade FSE over the engineer radio net. These obstacles are plotted on overlays and checked to ensure proper targeting by artillery and mortar assets. As the TOC receives reports of enemy obstacles, the Brigade engineer coordinates the engineer mobility effort. Dissemination of this information to reserve units and the artillery community allows them to avoid these obstacles.

Collocation of the Brigade engineer section in the FSE positively affects operational planning. The two elements jointly develop rather than coordinate fire support and engineer support in areas such as the linking of artillery-smoke fires to mobility efforts, groups of targets to support countermobility obstacles and joint artillery and engineer family of scatterable mines (FASCAM) minefield planning. However, the most valuable concept that came out of this joint section is reporting obstacles using the tactical fire direction system (TACFIRE).

TACFIRE Reporting Obstacles

The engineer community has a problem reporting obstacles. Relaying a report through each layer of the chain of command to division is time-consuming, and doing this using FM radios in an electronic warfare environment could prove fatal.

The artillery community, however, has the solution in TACFIRE. Its electronic capability to send hard-copy

messages to all subscribers using digital communications solves the problem.

Obstacle reporting via TACFIRE is relatively simple. (See Figure 1.) After completing a friendly obstacle, the engineer platoon seeks out the nearest forward observer (FO) or fire support team (FIST) on the battlefield. He then reports only the critical data regarding the obstacle to the observer. Using a digital message device (DMD), the observer reports the data via TACFIRE to the brigade FSE. A plain-text message with an address code works best. (See Figure 2.)

The brigade FSE reformats the report as an AT/CBTI message and transmits it to all division artillery units, using the electronic-mail message of interest (MOI) function. Each maneuver battalion and brigade TOC has a variable format message entry device (VFMED) in its FSE to receive the report. They, in turn, pass the report to the maneuver S2 or S3 for action as required.

When the report is received at the division FSE, it's handed to the ADE for action. Cannon artillery battalions receive the report over their O/I VFMED.

The FO or FSE who first receives the spot report reports the enemy obstacle. The FO, FISTs and Battalion FSEs send a plain-text message to the brigade FSE with the enemy obstacle's critical data. At the brigade FSE, the brigade engineer assigns it an obstacle number and releases it for transmission by TACFIRE as an AT/CBTI message.

If an FO isn't able to link digitally with TACFIRE, he sends the obstacle report to the battalion FSE using voice communications, and the battalion FSE enters it into the TACFIRE system. If the battalion FSE also isn't linked digitally, the message is relayed to the brigade FSE.

All reports should flow to the brigade FSE because that's where the brigade engineer section is. It's the focal point of the brigade's mobility, countermobility and survivability planning. It also allows battalion FSEs to fight the close-in battle while the brigade FSE coordinates the deep battle, FASCAM, rear-battle operations and the engineer effort.

Reporting Formats. The reports transmitted by FOs, FISTs and battalion FSEs to the brigade should be simple and direct. The essential elements of information to report an obstacle are as follows:

- a. Header (Who It's For).
- b. Obstacle (What It Is).
- c. Location (Where It Is).
- d. Obstacle Data (Additional Information).
- e. Reporting Unit (Who Sent It).

The brigade FSE reformats the report as an AT/CBTI and transmits the report to all subscribers linked with the direct-support artillery battalion computer. The division artillery also receives the report. Upon receipt, it changes the address code of the message and retransmits it to all division artillery subscribers. This allows dissemination throughout the division.

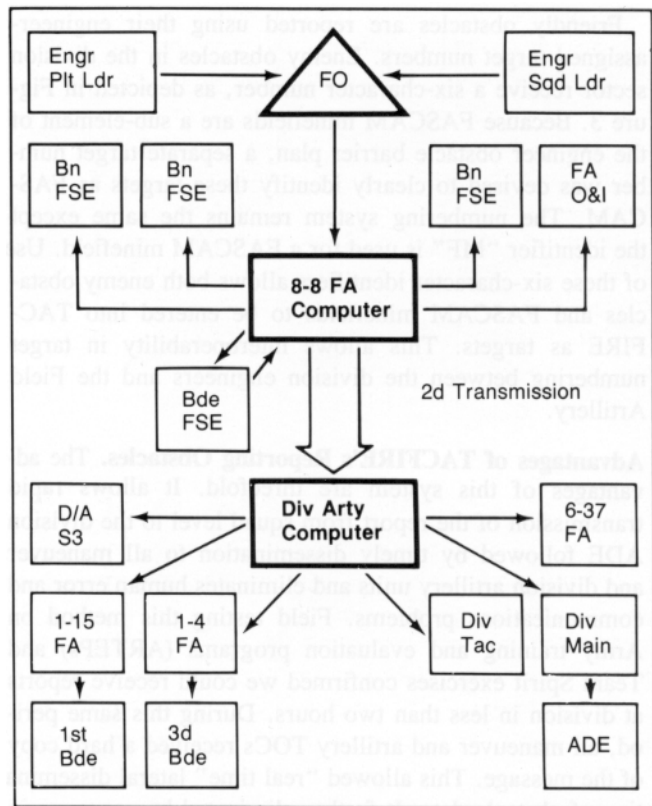


Figure 1: Obstacle Reporting Information Flow Throughout the Division

<p>Friendly Obstacle Report FO or FIST DMD Message to Brigade TEXT-TO_FSE2BDE_FR_3/C/2E_FO35_2XX2002_* (PT1) TEXT-CS182497_182951_TRI_STD_CONCERTINA_* (PT2)</p>
<p>Brigade CBTI Message __OZA3__SB: /_/2_/IDA; ATI; CBTI; DTG: /_/ /_ /_; PTXM: FOR FSE S3 ENGR PTM2: FRIENDLY OBSTACLE 2XX2002 WIRE PTM3: FROM CS182497 TO CS182951 PTM4: TRIPLE STD CONCERTINA PTM5: BY 3 C 2E FROM FSE 2BDE*</p>
<p>Enemy Obstacle Report FO or FIST DMD Message to Brigade TEXT-TO_FSE2BDE_FR_FO35_ENOBS_CT184297_* (PT1) TEXT-TK_DITCH_600X25X8_ATTITUDE_1600_MINES* (PT2)</p>
<p>Brigade CBTI Message __OZA3__SB: /_/2_/IDA; ATI; CBTI; DTG: /_/ /_ /_; PTXM: FOR FSE S3 ENGR PTM2: ENEMY OBSTACLE EN2001 TANK DITCH PTM3: CS184297 PTM4: 600x25x8 ATTITUDE 1600 MINES PTM5: BY 3 C 2E FROM FSE 2BDE*</p>

Figure 2: Sample Obstacle Reports

Friendly obstacles are reported using their engineer-assigned target numbers. Enemy obstacles in the division sector receive a six-character number, as depicted in Figure 3. Because FASCAM minefields are a sub-element of the engineer obstacle barrier plan, a separate target number was devised to clearly identify these targets as FASCAM. The numbering system remains the same except the identifier "MF" is used for a FASCAM minefield. Use of these six-character identifiers allows both enemy obstacles and FASCAM minefields to be entered into TACFIRE as targets. This allows interoperability in target numbering between the division engineers and the Field Artillery.

Advantages of TACFIRE's Reporting Obstacles. The advantages of this system are threefold. It allows rapid transmission of the report from squad level to the division ADE followed by timely dissemination to all maneuver and division artillery units and eliminates human error and communications problems. Field testing this method on Army training and evaluation programs (ARTEPs) and Team Spirit exercises confirmed we could receive reports at division in less than two hours. During this same period, all maneuver and artillery TOCs received a hard copy of the message. This allowed "real time" lateral dissemination of obstacle data. It further eliminated human error in copying, recording and relaying the message.

(Friendly) Obstacles	
2XX0000-2XX0999	Division Engineer
2XX1000-2XX1999	1st Brigade Engineer Unit
2XX2000-2XX2999	2d Brigade Engineer Unit
2XX3000-2XX3999	3d Brigade Engineer Unit
2XX4000-2XX4999	Allocated by Division
Engineer (Enemy) Obstacles	
EN0000-EN0999	Division FSE
EN1000-EN1999	1st Brigade FSE
EN2000-EN2999	2d Brigade FSE
EN3000-EN3999	3d Brigade FSE
EN4000-EN9999	Allocated by Division
Minefields (FASCAM)	
MF0000-MF0999	Division FSE
MF1000-MF1999	1st Brigade FSE
MF2000-MF2999	2d Brigade FSE
MF3000-MF3999	3d Brigade FSE
MF4000-MF8999	As required by Division
MF9000-MF9999	Corps or higher headquarters

Figure 3: Engineer Obstacle Numbering System

This system allows the direct-support artillery battalion "to see" the battlefield more accurately. Plotting obstacles on the S3 target overlay quickly displays the integration of

fires into the barrier plan. Spot reports received by the S2 make sense because he can visualize enemy units as they encounter obstacles. Blown bridges, road craters and enemy minefields now are reported to the S3. Movement of the battalion can be planned to avoid these obstacles. Fires in support of engineer obstacle breaching operations can be predicted and better coordinated.

Tests of TACFIRE's Reporting Obstacles. Field testing of this method showed the means by which the obstacle is reported to a TACFIRE VFMED was limited only by ingenuity. Given the requirement to forward the report to an FSE, observers used digital and voice to accomplish the mission. During periods when the battalion TACFIRE computer was down, units reverted to the manual FM radio system as a backup. Reports were transmitted when TACFIRE became operational again. During displacements of the Brigade FSE, battalion FSEs independently assumed responsibility for transmitting their AT/CBTI obstacle reports. This demonstrated the versatility of the system.

Initially, concern was expressed that the volume of obstacle data would overload TACFIRE and inhibit fire mission processing. Field exercises have proved this wrong. When in contact, FSEs revert to their primary mission of gunnery and delay all non-mission-essential intelligence reporting. As fire missions subside, combat intelligence reporting resumes.

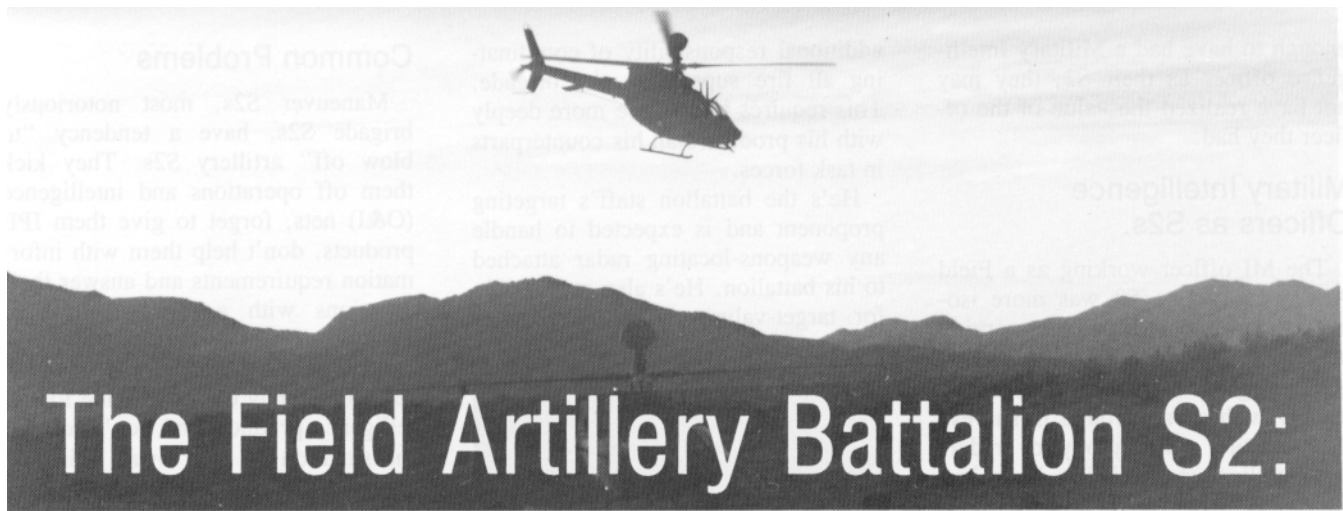
During a command post exercise, the 2d Brigade had to conduct a passage of lines through a Korean division and a dismounted attack. Liaison resulted in a wealth of information about engineer obstacles. The data was transmitted by TACFIRE to all TOCs within the Brigade and to the division artillery within six hours. If it had been done manually with overlays and lists, the information may not have been received in a timely manner. As a result of the information, the maneuver commander could see the battlefield and plan accordingly.

Conclusion

Obstacle reporting via TACFIRE doesn't eliminate the requirement for engineers to report obstacles through their chain of command. However, it eliminates the requirement for lateral coordination above company level and expedites the report to division headquarters. Using this method, commanders at all levels have real-time access to critical combat information.

The process enhances the fire support coordination of friendly obstacles and gives a clear picture of the enemy obstacle plan. It also mutually reinforces the effectiveness of the artillery and the engineers in their wartime missions.

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A Neglected Combat Multiplier

by Captains John F. Petrik and Edmund V. Pax, MI

A brigade can't apply its combat power without tactical intelligence. This is a truism no one disputes, but many forget it holds for combat power provided by organizations other than maneuver task forces. The brigade's direct-support Field Artillery battalion—its main source of fire support—is a good example. The battalion often fails to synchronize its fires with the larger operation because of tactical intelligence failures.

These failures are systemic but correctable within the scope of current doctrine, organizations and equipment. And the failures have much in common with others that cripple the rest of the brigade slice.

This situation is improving: the more time artillery battalions spend at the National Training Center, Fort Irwin, California, the more their S2s come into their own. Despite a scarcity of published tactics, techniques and procedures (TTPs), they have established themselves as valued members of their battalions' staffs.

Future artillery battalion S2s may find the recommendations in this article spare them from having to relive their predecessors' experiences. Although we wrote the article from the perspective of a heavy brigade's direct-support cannon battalion, the lessons outlined apply to light forces and general-support artillery battalions with little modification.

Background

Recently, the lieutenant Military Intelligence Officer position, 35D, was dropped from all Field Artillery battalion tables of organization and equipment (TOEs), except Pershing battalions. Now S2 officers will be Field Artillery captains, 13E00. (In the heavy divisions, the lieutenant 35D position was deleted in exchange for a second officer in the maneuver brigade fire support section.)

Artillerymen as S2s

All Field Artillery battalions carry an S2 and intelligence section on their TOEs, but when an artillery officer finds himself assigned as a battalion's S2, he quickly realizes his training hasn't prepared him for the job. As a Field Artillery officer, his background is fire support, battery operations, survey or target acquisition, and he probably has little or no understanding of tactical intelligence. He's easily sidetracked into service as the battalion's physical security officer and custodian of its personnel reliability program (PRP)—distinctly a second-class job—and then contributes little or nothing to tactical operations.

Why does this happen? First, intelligence manuals don't spend much time on Field Artillery. Second, the Field Artillery has long tended to disregard or

ignore tactical intelligence. In part, this is due to its own ethic as a supporting arm—"the brigade staff will tell us what we need to know, and tactical intelligence is someone else's business." The Branch's fixation on its emergency nuclear release and authentication system (ENRAS) and nuclear and chemical missions tends to engulf its S2s in surety requirements.

The artillery has organic elements that do many of the things maneuver arms expect from their S2s. Weather? Every division artillery and Field Artillery brigade has a meteorological section. Collection? The division artillery's target acquisition battery has five weapons-locating radars and a moving-target-locating radar. The OH58D helicopter was fielded as a fire support platform and has an artilleryman riding in its left seat.

The nature of the Branch's mission induces it more than any other combat arm to think of the enemy as an array of targets, and it has many sophisticated ways of acquiring targets. Artillerymen can delude themselves into thinking they're already doing *everything* the intelligence system could do for them.

Finally, artillerymen grew up in battalions where Military Intelligence S2s were unusual—where the positions were filled by Field Artillery lieutenants or captains who concentrated on nuclear surety and arms-room inspections. When fortunate

enough to have had a Military Intelligence officer as their S2, they may not have realized the value of the officer they had.

Military Intelligence Officers as S2s.

The MI officer working as a Field Artillery battalion S2 was more isolated than his contemporaries serving in maneuver battalions. His intelligence sergeant was an artillery NCO, usually with a background in survey, fire support, meteorology or radar. His intelligence specialist, if he had one, was whoever could drive an M577 and had a clearance—a clerk-typist, cannoner or wireman.

He had a hard time convincing his commanders and fellow staff officers he could give them an intelligence product that was not only useful, but also essential to the battalion's mission. The artilleryman S2 has the advantage of being at home in his organization but the disadvantage of not being trained in tactical intelligence.

Tactical Intelligence

To help the artilleryman serve more effectively as an S2, we analyzed the role tactical intelligence plays in the artillery's mission of providing fire support to the brigade. We compare the artillery S2 with his counterpart in the maneuver task force, reviewing typical problems and summarizing lessons learned.

What Artillery and Maneuver S2s Have in Common

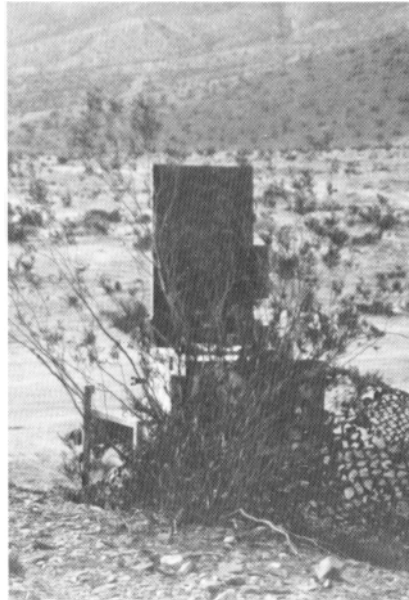
Both must serve as the commander's principal advisor on the enemy, weather and terrain. They must be able to nominate and meet intelligence requirements, be proficient at intelligence preparation of the battlefield (IPB) and run their organization's collection effort.

How the Artillery S2 is Different

He operates with a brigade perspective. His battalion supports an entire brigade, and he, therefore, is concerned with a larger area of operations than a task-force S2. His battalion is expected to operate continuously—never in reserve—and he works for a commander who has the additional responsibility of coordinating all fire support in the brigade. This

requires him to see more deeply with his product than his counterparts in task forces.

He's the battalion staff's targeting proponent and is expected to handle any weapons-locating radar attached to his battalion. He's also responsible for target-value analysis and target development.



A 9th Infantry Division AN/TPQ-36 Firefinder Weapons-Locating Radar Position. This radar can acquire enemy cannons and mortars at a range of 24 kilometers.

He coordinates, not only with his brigade S2, but also with his parent division artillery's intelligence officer. Through division artillery, he has quick access to division and corps assets.

His battalion doesn't have an air defense officer. Therefore, he often picks up responsibility for air defense by default.

He has no scout platoon, and his battalion often has only very rudimentary experience in patrolling. He does, however, have access to the brigade fire support element (FSE) and his battalion's fire support officers (FSOs) and forward observers (FOs). His battalion also has a survey platoon whose secondary mission is reconnaissance.

He has access to the most current weather information available anywhere in the corps through the meteorological messages his battalion's fire direction centers (FDCs) use.

Common Problems

Maneuver S2s, most notoriously brigade S2s, have a tendency "to blow off" artillery S2s. They kick them off operations and intelligence (O&I) nets, forget to give them IPB products, don't help them with information requirements and answer their questions with a standard, "Wait, Out."

Paradoxically, artillery S2s often rely completely on the brigade for intelligence products and don't develop the situation on their own. This passivity results in an intelligence product that isn't integrated into fire support planning.

The decision support template (DST) won't be able to drive the fire support execution matrix. Some Field Artillery S2s don't understand the purpose of various templates in the IPB process; therefore, they seldom use templates for situation and target development.

Artillery S2s often have difficulty organizing a collection effort. They fail to recognize collection assets and don't manage them effectively. The result is sporadic, inaccurate reporting from assets that received only the most general taskings.

They fail to extract the information available in the tactical fire direction system (TACFIRE) computer. They rely on voice reports rather than on automated processing of combat information.

Finally, few understand how the triad of decide, detect and deliver applies to IPB. The S2s are supposed to help develop targets, but they don't use targeting tools effectively: target-value analysis spreadsheets, target selection standards, reporting values, etc.

The Effective S2

In this article so far, we've discussed common problems the artillery S2 faces. Now we'll itemize the major tasks of an effective S2 and how he accomplishes each task.

The S2 Works as Part of a Field Artillery Battalion Staff. This begins with developing priority intelligence requirements (PIRs) and information requirements (IRs). These differ from common task-force PIRs. There's more interest in regimental artillery groups (RAGs), division

artillery groups (DAGs), bypassed enemy units, observation points (OPs) and target acquisition. Direct-fire range fans are relatively less important.

A good informal way to develop a PIR is to note the questions the battalion commander, S3 and other staff



A 3d Battalion, 82d Field Artillery, Fire Support Vehicle. Artillery observers in heavy forces have the M981 fire support vehicle.

officers ask as they begin to work on their plans. These are usually the things they really need to know, in contrast to the vague questions they come up with when they formally state their PIRs. Formally they ask, "Will the enemy attack? When, where and in what strength?" and "Will the enemy employ nuclear, biological and chemical weapons? If so, when and where?" as opposed to asking what they really need to know.

The S2's IPB is Continuous. This is another "motherhood" issue, but many S2s heave a sigh at the first sign of a lull and put their section to bed. But the battle continues even though the engagement may be over, and the S2's product is the indispensable point of departure for everyone else's planning. The other staff officers must apply that product to their portions of the Field Artillery support plan.

The S2 Collects Information. The Field Artillery battalion S2 too often

waits passively and patiently for the maneuver brigade S2 to feed him information. This is nonsense. The brigade S2 must provide his direct-support Field Artillery battalion S2 the same intelligence product he gives his task force S2s. Artillery S2s must insist on the same treatment their counterparts in the task force get. A smart brigade S2 will give it to them and be repaid many times over in artillery-collected combat information.

Even more importantly, the artillery battalion S2 must help himself, and he must do so with a comprehensive, dynamic reconnaissance and surveillance (R&S) effort that meets his PIRs and makes the most of his assets. The first step simply is to recognize these assets and to know their capabilities—FOs, FSOs, FSEs, survey parties, combat observation lasing teams (COLTs), battery observation parties and radars.

Field Artillery battalion S2s usually are much better at defensive IPB than they are at offensive IPB. This is because

Collection Plan Worksheet																
Priority Intelligence Requirements	Indicators	NAI	Specific Orders or Requests	Agencies to Employ												
				3 Bde FSE	TF 1-24 FSE	TF 1-23 FSE	TF 1-22 FSE	A/ 2-636	B/ 2-636	C/ 2-636	HHB/ 2-636	Svc/ 2-636	Survey	AN/TPQ-36 Radar	FSOs	Div Arty
1. Will enemy conduct preemptive attack in 1-23 Cav's area of operation?	a. Unit moving forward.	NAI 1 NK 100200	Report recon elements and direction of movement. Special attention to NAIs 1 and 3.	(X)	X	(X)	X	(X)	(X)	(X)	(X)	(X)	X		X	X
	b. Massing of armor, motorized rifle artillery and logistics.	NAI 2 NK 100250		(X)	X	X	X			(X)			(X)	X	(X)	
	c. Increased patrolling.	NAI 4 NK 130300		(X)	X	X	X	(X)	(X)	(X)	(X)	(X)	X	(X)	X	(X)
	d. Increased barrage jamming.	NAI 5 NK 130350		(X)	X	(X)	X									X
	e. Formation of RAG/DAG.	NAI 6 NK 133370		(X)	X	(X)	X									
2. Where are the DAG and RAG locations? What are the disposition and composition of enemy supporting artillery?	a. Massing of artillery.	NAI 7 NK 086350	Report locations of targetable communication nodes and TA Radars.	(X)	X	(X)	X									
	b. Increased digital traffic.	NAI 8 NK 014295		(X)	(X)	(X)		X	X	X	X	X	(X)	X	(X)	
	c. Increased meteorological radar radiations.			(X)	(X)	(X)										
	d. Extensive artillery preparations.			(X)	X	X	X	(X)	(X)	(X)	(X)	(X)	(X)	X	X	

1. The "Xs" indicate assets able to provide the information. The circled "Xs" show those assets that received a tasking or request for the information.
 2. Guards Motorized Rifle Division
 3. Guards Tank Division

A sample collection worksheet prepared by a direct-support Field Artillery battalion S2. Note he has tasked fire support personnel, surveyors and firing batteries for information as well as requesting information from his brigade and division artillery intelligence sections.

they can do terrain analysis and some situation templating, but they don't collect to confirm their DST. If they use these assets properly (focusing them on named areas of interest, or NAIs, with intelligence acquisition tasks that not only address the PIR, but also are appropriate to the asset's capabilities) there's no reason why they can't have as effective an R&S plan as any organization on the battlefield.

The S2 Makes the Most of Weapons-Locating Radars. Control of the radar falls to the S2. With the advice of the radar warrant officer, the S2 should give the radar its positions, orientation and commander's target criteria. He should recommend critical friendly zones. Above all, he should integrate the radar into the entire targeting and collection effort.



Active component Field Artillery battalions in heavy divisions and Field Artillery brigades have TACFIRE. The FSEs and artillery battalion intelligence sections have VFMEDS that allow them access to this system.

The S2 Uses TACFIRE for Intelligence Products. The TACFIRE is both a battle management computer and a data communications and processing device. The S2 has access to this system through a terminal in the battalion operations section's M577—the variable-format message entry device (VFMED).

If he uses TACFIRE, he gets automatic access through message of interest (MOI) processing to any report the system handles. Of particular interest to him is the artillery target intelligence function (ATI). When he's



The 5th Infantry Division Artillery Meteorological Section prepares to release a sounding balloon. The radiosonde transmits upper-air data to the AN/GMD-1 Rawin set where they're processed into a variety of meteorological messages. The equipment shown here is the Rawinsonde System, now being replaced by the meteorological data system (MDS).

on-line with a division artillery, Field Artillery brigade or corps artillery computer, he can get near-real-time combat information from artillery sources throughout the corps.

The S2 Uses FSEs. Infantry and Armor Army training and evaluation program mission training plans (AMTPs) don't call for their attached FSEs to process or exchange intelligence, and Field Artillery AMTPs are still in draft. So we fall into an unfortunate gap in the literature. However, in other manuals (notably *FM 6-20-1 Field Artillery Cannon Battalion* and *FM 6-20-1J Field Artillery Battalion*) the FSEs are responsible for acting as the artillery's liaison with maneuver headquarters, and exchanging intelligence products is strongly implied.

The FSE is the artillery's representative in the maneuver command post (CP); its M577 sits next to the maneuver S2's. If the artillery S2 insists on it and makes a point of demanding it in training exercises, the FSEs in the brigade and task force will give him maneuver intelligence products as they are generated.

Failing to use the FSEs for intelligence is felt all the way up the fire support chain. If the direct-support battalions don't get their FSEs involved, they largely blind the entire artillery with the corps to the brigades' close-in battle. The side-looking radar (SLAR) and all the other exotic collection means at the

S2 Library

The artillery battalion S2 will find these manuals useful in starting his intelligence library. In addition to his basic fire support and artillery operations manuals, the S2 must understand intelligence operations and the threat.

Intelligence Operations

FM 34-1 Intelligence and Electronic Warfare Operations

FM 34-3 Intelligence Analysis

FM 34-10 Division Intelligence and Electronic Warfare

FM 34-80 Brigade and Battalion Intelligence and Electronic Warfare Operations

FM 34-130 Intelligence Preparation of the Battlefield

The Threat

FM 100-2-1 The Soviet Army: Operations and Tactics

FM 100-2-2 The Soviet Army: Specialized Warfare and Rear Area Operations

FM 100-2-3 The Soviet Army: Troops, Organizations and Equipment

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division or corps level aren't good at telling you what the task forces are in contact with.

The S2 Plans and Integrates the Battalion's Defense. A good S2 takes the battery defense plans, checks for weak spots and possible fratricides and arranges for coordinated early warning systems. He



A 5th Infantry Division AN/TPQ-37 Firefinder Radar. Larger and more powerful than the AN/TPQ-36, the Q-37 can locate enemy cannons and rockets at ranges of 50 kilometers.

must pay particular attention to the terrain and analyze it in three dimensions to account for both air and ground threats. The air threat is commonly overlooked, but the S2 must brief information about the aircraft the enemy is operating, the degree of the threat and air avenues of approach.

The S2 Contributes to Target Development. Consider the targeting approach "decide, detect and deliver." Here the S2 and the targeting officer work in harness.

Decide equates to target-value analysis embedded in a DST. Target-value analysis matches the enemy's operation with his most valuable elements (the high-value targets), selects those whose attack ensures friendly success (the high-payoff targets) and gives a detailed target description. The Army has produced a target-value analysis spreadsheet for most

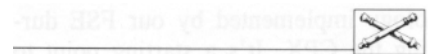
types of enemy operations and published these in the "Field Artillery Mission Area Analysis." A high-payoff target list should be part of every Field Artillery support plan.

Detect equates to target acquisition. All sources of targeting information should be considered—visual, electronic, ground and air.

Deliver applies target selection standards to combat information and generates calls for fire to the battalion FDC. Target selection standards state the reliability and accuracy of each source of targeting information expressed in terms of whether the source's reports are to be considered targets or merely target indicators (requiring confirmation by other sources). Sound target selection standards keep the S2 from generating careless calls for fire that lack location accuracy.

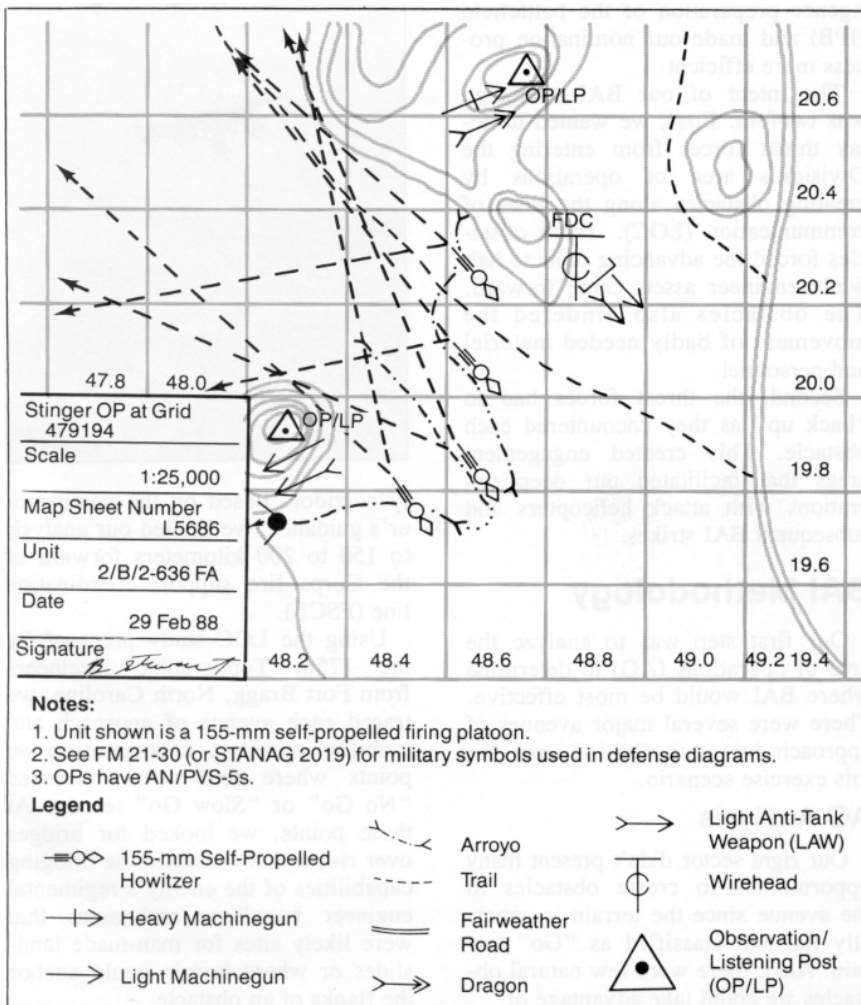
Conclusion

The artillery S2 is a neglected combat multiplier. His job demands mastery of all the skills required of a task-force S2 as well as several peculiar to the artillery. But an effective S2 can make the difference between successful fire support and failure to bring combat power to bear on the enemy.



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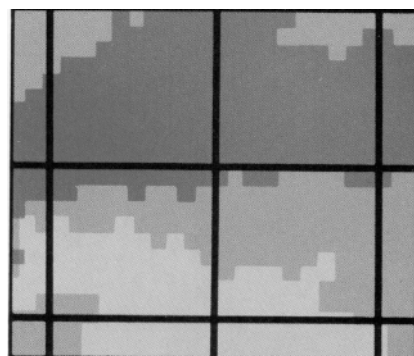
Captain Edmund V. Pax, Military Intelligence, commands A Company, Operations Group, at the National Training Center. He has served as the Field Artillery Battalion S2 Trainer for 25 rotations at the NTC. His other assignments include serving as a ground surveillance radar platoon leader, scout platoon leader, S2 in both armored and mechanized infantry battalions and the officer in charge of a technical control and analysis element.



The S2 should check the firing platoon defense diagrams. He must concentrate on achieving early warning of the enemy's approach and integration of the battalion's defenses.

BCTP Lessons Learned – Battlefield Air Interdiction

by Captain William N. Cosby



Simulation Series

The 101st Airborne Division (Air Assault) finished the command post exercise (CPX) phase of its two-phase battle command training program (BCTP) in early 1989. The BCTP opposing force (OPFOR) had armor and airborne assets for mid- to high-intensity conflict. We faced three first-echelon divisions and six second-echelon divisions. The BCTP CPX and the preceding train-up exercises made the Division fire support element (FSE) more effective and efficient in its support of the other staff sections and the commander.

In this article, I outline the battlefield air interdiction (BAI) methodology implemented by our FSE during the CPX. It's a starting point to help other units develop their BAI targeting.

Background

We divided the Division main FSE into two subsections: current operations and targeting cell. The current operations cell deals with artillery up to and including multiple launch rocket systems (MLRS). It also handles coordination and fire support coordination measures (FSCMs) and is responsible for all interactions with the Division Artillery, assault command post (CP) and rear CP.

The targeting cell handles Lance and BAI nominations and chemical and nuclear target analysis and helps the G3 plan deep operations. The targeting cell also tries to bridge the gap between the Air Force's air interdiction (AI) campaign and the close battle influenced by the tube artillery in the brigade sectors.

One aspect of the FSE's operations

that improved in the train-up was our BAI nominations. In the course of our planning, we developed methods to determine, evaluate and nominate targets for BAI strikes. The methodology was a continuation of the intelligence preparation of the battlefield (IPB) and made our nomination process more efficient.

The intent of our BAI campaign was twofold. First, we wanted to delay threat forces from entering the Division's area of operations by creating obstacles along the lines of communication (LOC). These obstacles forced the advancing units to halt while engineer assets came forward. The obstacles also hindered the movement of badly needed materiel and personnel.

Second, the threat forces had to "back up" as they encountered each obstacle. This created engagement areas that facilitated our deep operations with attack helicopters and subsequent BAI strikes.

BAI Methodology

Our first step was to analyze the area of operations (AO) to determine where BAI would be most effective. There were several major avenues of approach into our division area for this exercise scenario.

AO Analysis

Our right sector didn't present many opportunities to create obstacles in the avenue since the terrain is generally flat and classified as "Go" terrain. Also, there were few natural obstacles we could take advantage of.

On the left flank, we analyzed each major avenue of approach and mobility



corridor. Based on the commander's guidance, we limited our analysis to 150 to 200 kilometers forward of the Corps fire support coordination line (FSCL).

Using the LOC study prepared by the 175th Topographic Engineers from Fort Bragg, North Carolina, we traced each avenue of approach and mobility corridor, concentrating on points where the routes traversed "No Go" or "Slow Go" terrain. At these points, we looked for bridges over rivers that exceeded the bridging capabilities of the enemy's regimental engineer battalions and areas that were likely sites for man-made landslides or where terrain could anchor the flanks of an obstacle.

After using the LOC study, which had a 1:250,000 scale, we then traced

each route on 1:50,000 scale maps. This scale gave a more accurate "view" of each targeted area and the terrain through which each route passed. By using the larger detailed maps, we found other areas that we could target in the "Go" terrain as well. We were able to locate our potential targets to within five seconds latitude and longitude and to an eight-digit grid.

Target Analysis

The targeted areas were then compared with the data provided by the topographic engineers at Fort Campbell, Kentucky. By using an Air Force interdiction study and available bridge and tunnel data, we determined the potential target's composition and basic encyclopedia (BE) number and if it would create a "significant obstacle." The target created a significant obstacle if no bypass was available within 10 to 15 kilometers. The interdiction study also gave the man-hours required to repair each obstacle and the equipment necessary.

The BE number gives the Air Force targeteers the exact data to plan effectively the munitions to achieve the desired effects, facilitating the nomination process. Without the BE number, it's doubtful the nomination will be approved. With that information, we could predict the duration of each obstacle's effectiveness and more importantly "weed out" those targets that would cause little effect.

Target Sequences

Once we had our targeted areas, we used order of battle (OB) information provided by the G2. The OB analysts gave us the enemy units' initial locations and a doctrinal rate of march that we supplemented with the doctrinal template information in the "Fire Support Mission Area Analysis Phase II Report," Chapter 3 (15 December 1980). With that information, we templated expected enemy locations every 12 hours until the second-echelon divisions came into contact.

We then "sequenced" our BAI targeting to create or restore obstacles, trying to stay six to 12 hours "ahead" of the advancing enemy. This made it more difficult for the enemy to reconnoiter our obstacles and often forced him to stop

and wait while the engineer assets came to the front of his march columns.

Target Effects

The effect of our BAI targeting was threefold. **First**, it slowed the enemy's rate of march and allowed us to sequence him into our individual sectors, preventing him from massing more forces against us.

Second, by reinforcing these obstacles by fire with a combined-arms team on the ground, we delayed the enemy for 12 hours or more. This also created a large engagement area behind the obstacles, which "set up" our deep operations with attack helicopters. By attacking enemy engineer assets at these obstacles, we created even longer delays. The enemy came upon successive obstacles and had to bring more engineer assets forward.

Third, by targeting 150 to 200 kilometers forward, we separated and delayed the follow-on divisions entering the AO and confused the enemy about our force dispositions. A bonus effect was that our targeting achieved some battle damage on the second- and third-echelon divisions before he came into contact with us.

Target Tracking

A very important part of the methodology was the interaction with the analysts in the secret compartmented information facility (SCIF). By establishing a close working relationship, they came to understand our process and priorities. The SCIF tracked specific units such as surface-to-surface missiles (SSMs), multiple rocket launcher (MLR) battalions and support regiments, providing more accurate locations and, more importantly, updating the rates of march. We then refined our predicted enemy locations for subsequent BAI nominations and deep operations. This is important since the BAI and deep operations planning cycle is 36 to 48 hours.

In addition to the LOCs, our BAI targeting included forward airfields that could support heliborne operations and logistical facilities, such as refineries. The purpose was to deny forward staging areas for operations in the rear area and force the enemy to bring all logistical

assets forward from its rear bases, allowing it to capture little or no indigenous support.

Priority and Clarity

Two additional documents that helped our operations were the target attack and target acquisition priorities matrix we produced and an XVIII Corps FSE information paper addressing the BAI nomination form.

Target Attack and Target Acquisition Priorities. The matrix shown in the Figure delineated the Division's target attack and target acquisition priorities in 24-hour periods for 72 hours. During the regular targeting cell meetings at 1000 and 2000, the priorities were discussed and proposed. These were then briefed to the Commanding General every morning. Once approved, the matrix was posted in the targeting cell and passed to various sections, such as the SCIF and subordinate units. The matrix allowed sections to prioritize assets and efforts.

The Figure shows the matrix we used and the sample priorities that might reflect deep operations. The different time blocks don't match exactly. Targets generally aren't attacked at the same time they're acquired. Instead, they're attacked 24 to 48 hours later. This allows the deep operations cycle to work and also allows us to develop a more lucrative engagement area as the targets advance forward and determine more accurate locations.

There are obvious exceptions to this process. Lucrative targets such as FROGS (free rockets over ground), Scuds (surface-to-surface missiles), Soviet-made mobile rockets, etc., are attacked as acquired and as assets become available.

As the Division gradually shifts its focus from the current mission, the priorities of the different categories shift accordingly. The enemy's air defense artillery (ADA), always a high-priority target, reflects the requirement to protect helicopters during our extensive air assault operations. Vertical envelopment forces are air assault, airborne, attack helicopter units and bases from which they can stage for operations into our rear area.

The Corps Information Paper. This paper discussed the BAI nomination form by entry and prevented confusion

Attack Priorities	Acquisition Priorities
0-24 Hrs Vertical Envelopment (Abn, AAslt and Attk Hel Units) ADA Engr Man (2d Echelon Units of 1st Echelon Div) Nuc/Chem FS C ³ I*	Vertical Envelopment ADA Man (2d Echelon Div) Nuc/Chem Log (Spt Regiments) RSTA C ³ I
24-48 Hrs Vertical Envelopment ADA Engr Man (Lead Units of 2d Echelon Div) Nuc/Chem FS C ³ I (RAGS/DAGS**) RSTA***	Vertical Envelopment ADA Man (3d Echelon) FS Nuc/Chem Log (Spt Regiments) C ³ I (RAGS/DAGS) Engr
48-72 Hrs Vertical Envelopment ADA Engr Man (2d and 3d Echelon Divisions) Nuc/Chem FS C ³ I	Vertical Envelopment ADA Man FS RSTA Nuc/Chem Log (Spt Regiments)
*Command, Control, Communications and Intelligence **Regimental Army Group/Divisional Army Group ***Reconnaissance, Surveillance and Target Acquisition	

Sample Target Attack and Target Acquisition Priorities Matrix. The time blocks don't match exactly as you usually acquire targets 24 to 48 hours before you attack them, except extremely lucrative targets.

between the Division, which nominated targets, and the Corps, which consolidated the nominations and submitted them to the battlefield coordination element (BCE). An example was the "effects desired" entry.

If we specified a desired effect such as "destroy bridge" and the Air Force could not achieve the specified effects, the mission wouldn't be flown without some adjustment. This

would require considerable coordination among members of the Air Force's tactical air control center, battlefield coordination element and Corps to adjust the desired effects to something achievable.

If we simply specified "deny use of bridge" or "prevent passage beyond this point for 12 hours," it gave the Air Force greater freedom to plan, and consequently, the missions were more likely to be flown.

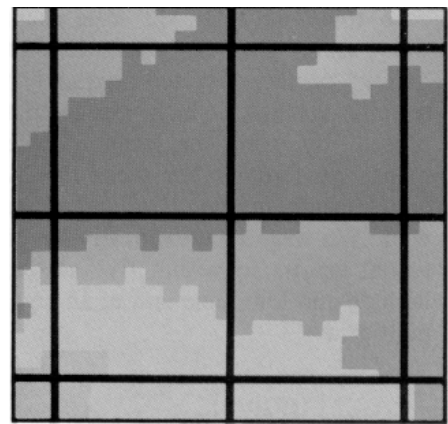
View from the Blockhouse

FROM THE SCHOOL

Version 9 Software

In the fourth quarter of FY 90, units will start receiving artillery tactical data systems Version 9 software packages for the multiple launch rocket system (MLRS) and Lance system, the battery computer system (BCS), the tactical fire direction system (TACFIRE) and Firefinder radar. These new packages will upgrade old capabilities and add new ones.

In the past few years, we've witnessed vast improvements in the Field Artilleryman's "tools of the trade." New weapon systems with greater ranges, accuracy and capabilities have been developed. Our soldiers use new families of more lethal munitions and employ improved communications devices to capitalize on the latest technologies to support command and control. These changes



Simulation Series

Conclusion

Our BAI methodology was tremendously helpful, particularly when time was compressed. It refined and organized our process. What made our methodology successful was the hard work and coordination among the different sections and our FSE counterparts at the XVIII Airborne Corps.



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have improved our lethality and survivability greatly. The Version 9 software packages maximize our capabilities in these times of rapid change.

While no article can provide in-depth knowledge of every system, this article gives some insight into the software changes and what these new improvements mean in operational terms. The following provides that familiarity to the user.

MLRS/Lance

A revolution is about to take place in the world of MLRS/Lance fire direction—Version 9. The software combines MLRS and Lance in one software package, will change MLRS/Lance fire direction and help the MOS 13P MLRS/Lance Fire Direction Specialist do his job.

One hardware change is the fielding of the fire direction system (FDS) in MLRS platoons. This BCU power distribution unit (PDU), printer interface device (PID) and printer will enhance the MLRS platoon's command and control abilities from the "old days" of the platoon leader's digital message device (DMD).

MLRS Software Changes. The MLRS system has several changes. The first and most obvious change is the ability to command and control the Army tactical missile system (Army TACMS) munitions.

Automatic message processing is a new capability added for both the MLRS and Lance systems. The function allows the operator to select certain messages for processing without his intervention. This relieves him of handling many routine messages and speeds processing. The new software also allows a unit to fire at moving targets using predicted locations and increases the ability of the MLRS fire directions center (FDC) to build and execute fire plans.

MLRS Tactics and Doctrine. The software changes will have an impact on MLRS tactics and doctrine. The platoon FDS allows the MLRS battery commander to move his unit using the "Jump-TOC" (tactical operations center) concept with a platoon's acting as the battery FDC, which enhances command and control.

Version 4 Launcher Compatibility. Version 9 retains "backward" compatibility with MLRS Version 4 launcher software to support the changes in force structure during the next several years. The software also allows an MLRS battalion or battery to control Lance launchers in an MLRS unit as well as a "pure" Lance unit.

Lance Software Changes. Version 9 combines the MLRS and Lance software programs into a single integrated package. While the Lance system has changed only slightly, the software uses formats common to both MLRS and Lance. This allows 13P soldiers to operate in MLRS or Lance units without extensive retraining. The automatic processing function will help Lance FDC personnel by reducing the amount of operator interventions for routine message traffic.

Personnel Impact. The software will be fielded by a new equipment training team (NETT). After NETT training, the

unit will be responsible for maintaining 13P proficiency. For skill qualification test (SQT) purposes, the MOS will continue to be tracked with MLRS soldiers on one track and Lance soldiers on another.

The Department of the Army doesn't consider this tracking for assignments, however, and 13P personnel will continue to switch between Lance and MLRS from assignment to assignment. The Version 9 software will make the transitions easier from one system to another.

Future Developments. Version 10 of the MLRS and Lance fire direction systems will be the first step toward the advanced Field Artillery tactical data system (AFATDS). Using new hardware and new software programmed in Ada, Version 10 will give the Lance and MLRS commanders and fire direction personnel increased memory and processing capabilities.

More Information. If units have questions about the MLRS/Lance Version 9 software, call the New Systems Division, Gunnery Department, Field Artillery School, Fort Sill, Oklahoma, at AUTOVON 639-3901 or commercial (405) 351-3901.

BCS

The BCS Version 9 software is enhanced more than any previous version and is easier for the operator as well as the supervisor to use. The software completely redesigns the operating system and applications programs.

Setup and Initialization. System setup and initialization have been modified to ensure all appropriate message formats are linked during the building of a new data base. In the past, the BCS operator had to call up each message format from the message skeleton menu or the main index and input the appropriate values to form a data base. Now, there are seven message formats linked when the program is loaded. These include computer and communication setup message formats and ammunition and fire-unit formats.

FSCM. The fire support coordination measures (FSCM) portion of the software has been expanded to include the input and storage of one forward line of own troops (FLOT), one zone and 10 circular restrictive fire areas (RFAs). It added a message format called the SPRT;ZNE: to accommodate the input of the zone. In addition, a message format called the SPRT;LOC: was added to allow the BCS operator to locate observers by means of trilateration, resection or triangulation.

FCI. The fire control information (FCI) data was updated for all weapon systems. Many new shells and fuzes have been added to the system to reflect what's in the field. Because ballistics calculations also have been improved, we can solve gunnery problems more accurately.

Interface. Version 9 interfaces with several new systems: meteorological data system (MDS), airborne target handover system (ATHS) on the OH58D helicopter and the automatic fire control system (AFCS) currently being developed for the howitzer improvement program (HIP) system.

Massing Fires. The BCS now can mass fires on targets. One BCS can control up to five firing units, either platoons or batteries and itself. This allows the battalion TACFIRE to turn over control of the battalion to a BCS and still provide the maneuver forces massed fires. This also allows more flexibility for light divisions until light TACFIRE (LTACFIRE) is fielded.

Fire Planning. The fire-planning routine is now a working piece of the software. We can build or receive four fire plans for storage. Target capacity also has increased to allow up to 78 targets with the four fire plans. The family of scatterable mines (FASCAM) fire planning allows one to four plans to be stored as FASCAM plans. In the past, only one fire plan could be designated as FASCAM, and it was nonfunctional.

Operator Functions. Many BCS cosmetic changes have been made with the operator in mind. For example, the BCS operator can tab subfields in message formats rather than use the space bar. We rearranged message formats and deleted portions never used by the BCS. The software now has clearer error and warning messages. Target and known-point files have been combined into one with no difference in capacity. All the files in BCS have been altered in one way or another for easier access or operator viewing.

More Information. If units have questions about the BCS Version 9 software, call the New Systems Division, Gunnery Department, Field Artillery School, AUTOVON 639-6988 or commercial (405) 351-6988.

TACFIRE

At last, we're replacing the overworked Version 7 TACFIRE tape, which hasn't been updated since 1986. This delay is a result of the Field Artillery School's emphasis on quality control. Version 9 has received the most extensive testing to date. Units will receive the software between May and July of this year.

MLRS Family of Munitions (MFOM) Command and Control. This software adds the ability to provide command and control for the Army TACMS and the expanded MFOM. We modified the TACFIRE software to better control MLRS launch platforms using these improved munitions. The fire support elements (FSEs) at the corps and division levels will exercise this control. New commander's criteria values will govern the selection of these munitions to best support the commander's intent.

Other software modifications allow it to "talk" with deep-looking target acquisition sensors such as the joint surveillance and target attack radar system (Joint STARS). Also, we updated the FSE nuclear data base. The TACFIRE FSE program now reflects the latest changes to *FM 101-31-2 Nuclear Weapons Employment Effects Data*. Version 9 incorporates data for new weapons and cannon munitions.

HIP and M119 Command and Control. Version 9 supports the command and control functions for the HIP

and the M119 British light gun. It also removes ballistic computation capabilities from TACFIRE. This allows faster fire-mission processing because it was a redundant calculation. The battery always has recomputed ballistics.

TACFIRE Communications. To a large degree, we corrected TACFIRE's communications problems by using smarter communications routines. The TACFIRE now employs bit-oriented message (BOM) compression that sends only the data entered in a message and not field names. Further, when multiple messages are intended for the same destination, they'll be sent in a single transmission. This is transparent to the operation.

Another communications enhancement is the ability to employ the KY-57 communications security (COMSEC) device in support of TACFIRE. Using the KY-57 eliminates the tell-tale warbling tones of digital communications and enhances survivability.

Software Solutions. Version 9 corrects several software problems. To be exact, we corrected 57 problems on the brigade, corps and division artillery (BCD) tapes and 39 problems on the battalion (Bn) tape.

More Information. If units have questions about TACFIRE Version 9 software, call the TACFIRE Section, Command and Control Division, Fire Support Combined Arms Operations Department, Field Artillery School at AUTOVON 639-3811 or commercial (405) 351-3811.

Firefinder

Today, digital communications between Field Artillery units is more or less a common occurrence. However all too often, the digital communications link seems to "take forever" to get established. Concurrent training, glitches in the software of each subscriber's equipment and different names for message formats have contributed to low confidence in our ability to fight the next battle by relying on the digital communications link. Firefinder Version 9 software, scheduled for fielding from June to August 1990, significantly improves the digital communications link (as compared to Version 7).

Free Text Message (FTM). Using the old software, the Firefinder operator can't transmit or receive an FTM. He must rely on voice communications that tie-up the net for an excessive period of time. Version 9 allows the operator to create, edit, save and send a 35-character FTM to any selected subscriber.

Resynchronization. Currently, the Firefinder operator has a problem with resynchronization. He must recycle through the communications portion of the program to change his transmit and receive indices. This is very time-consuming. By using Function Code 56 of Version 9, the Firefinder operator can go directly to the transmit and receive indices and make the appropriate changes immediately.

TACFIRE Compatibility. When the Firefinder operator receives a TACFIRE message, he's unfamiliar with most of the terms. For example, a TACFIRE A9 message is

FM/RFAF while a Firefinder A9 message is called priority target report.

All messages in the new software transmitted or received by Firefinder have in the header both the Firefinder and TACFIRE names for the message. This should eliminate a great deal of confusion.

Net Member Deletion. Currently, the only way a Firefinder operator can delete a net member from the computer is to wait until the computer memory subscriber tables are full. Version 9 has a new function code. The code (59) allows the

Firefinder operator to delete a net member without the memory's being full.

Faulty Radiation. Unlike Version 7 software, the new software won't allow the radar to radiate when a fault occurs. Firefinder only will resume radiating when the fault is cleared automatically or by the operator.

More Information. If units have questions about the Firefinder Version 9 software, call the Radar Division, Target Acquisition Department, Field Artillery School, at AUTOVON 639-6621 or commercial (405) 351-6621.

Field Artillery Publications Down Range

In past months, the Doctrine Division of the Directorate of Training and Doctrine (DOTD) at the Field Artillery School, Fort Sill, Oklahoma, has received several questions about the status of Field Artillery manuals. This article should answer most of those questions.

Field Manual, Training Circular, Special Text—What's the Difference?

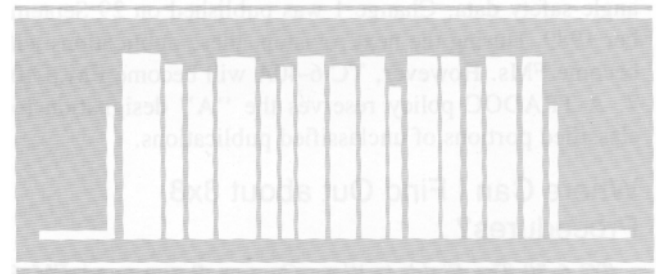
The Training and Doctrine Command (TRADOC) has restructured the Army Doctrinal Literature Program and redefined field manuals, training circulars and special texts. Field manuals (FMs) contain doctrine, tactics, techniques and procedures (TTP) that prescribe how the Army and its organizations function in terms of mission, organizations, personnel and equipment. These TTP should facilitate an understanding of "what" and "how" for commanders and troops to execute their missions and tasks. Training circulars (TCs) contain information that applies to more than one unit or MOS and procedures for using equipment, devices or simulators in training. Special texts (STs) are local command publications required for issue in resident or nonresident instruction. The STs also may be used to expedite fielding of emerging doctrine. For example, when a new system is fielded, TTP may be distributed initially in the form of an ST. The ST will remain in effect until the appropriate FM is officially changed to incorporate the provisions of the ST.

In accordance with this guidance, all Field Artillery publications will become FMs. Special texts (STs) produced at the Field Artillery School will remain STs.

What is the Status of the FM 6-20 Series of Manuals?

FM 6-20 *Fire Support in the AirLand Battle*, our capstone manual, is in Department of the Army (DA) print, dated May 1988. This covers the principles and fundamentals of fire support in AirLand Battle.

FM 6-20-30 *Tactics, Techniques and Procedures for Fire Support for Corps and Division Operations* was approved by the Combined Arms Center (CAC), Fort Leavenworth, Kansas, and is in DA print, dated October 1989.



FM 6-20-40 *Tactics, Techniques and Procedures for Fire Support for Brigade Operations (Heavy)* and **FM 6-20-50** *Tactics, Techniques, and Procedures for Fire Support for Brigade Operations (Light)* were approved by CAC and published in January 1990.

FM 6-20-2 *Tactics, Techniques, and Procedures for the Corps Artillery Headquarters, Division Artillery and Field Artillery Brigade* is in final draft. Close Support Study Group IV put together this coordinating draft and incorporated **FM 6-20-2J** into this new manual. (The "J" relates to the J series tables of organization and equipment or TOEs). A field working group met at Fort Sill; composed of personnel of different corps and division artilleries, the group produced the final draft of this manual in October. The draft will be sent to CAC for final approval, with the FM's projected DA printing distribution date of the second quarter of 1991.

FM 6-20-1 *Tactics, Techniques and Procedures for the Field Artillery Cannon Battalion* is in final draft. Close Support Study Group IV wrote the coordinating draft and incorporated FM 6-20-1J. A team comprised of personnel from different division artillery units and the National Training Center, Fort Irwin, California, put together the final draft in October. The manual's projected DA printing is the first quarter of 1991.

FM 6-20-10 *Tactics, Techniques, and Procedures for the Targeting Process* final draft is now being edited, and DA should have it printed in the third quarter of 1990. This manual is the product of a combined effort with the Military Intelligence Community and School, Fort Huachuca, Arizona.

What Happened to **FM 6-40 Field Artillery Cannon Gunnery**?

The old FM 6-40, the Field Artillery's Bible, was divided into two new manuals: **TC 6-40 Field Artillery Manual Cannon Gunnery** and **TC 6-40A Field Artillery Automated Cannon Gunnery**. TC 6-40, published in December 1988, includes step-by-step instructions for all aspects of manual cannon gunnery, to include nuclear and nonnuclear solutions to gunnery problems. TC 6-40A, published in April 1989, provides step-by-step instructions on solving gunnery problems by automation. The TC is broken down into three parts: Part I, TACFIRE (tactical fire direction system); Part II, BCS (battery computer system); and Part III, BUCS (back-up computer system). Change 1 to TC 6-40 corrects Figure D-3, the Safety T, and high-angle safety data. Change 1 was published on 29 September 1989. During the next revision, these publications will become FMs. However, TC 6-40A will become FM 6-40-7. A TRADOC policy reserves the "A" designation for classified portions of unclassified publications.

Where Can I Find Out about 3x8 Procedures?

TC 6-50 The Field Artillery Cannon Battery and **FM 6-20-1** cover 3x8 procedures, now called platoon-based operations. TC 6-50 also covers 3x6 operations, now called battery-based operations. This manual was printed September 1988.

Change 1 to TC 6-50 was published on 29 September 1989 and covers safety-related material in Chapter 11, "Safety Procedures"; Appendix C, "Gunner's Qualification Test"; and Appendix Q, "Sample Tests and Reports." The revision to this manual will cover combat service support in greater detail and will rename 3x8 to platoon-based and 3x6 to battery-based operations. A working group met at Fort Sill and finalized this change in October 1989. The projected DA printing for the revision is in the fourth quarter of 1990.

What's TC 6-71—The One the Maneuver Soldiers are Talking About?

TC 6-71 Fire Support Handbook for the Maneuver Commander is for the maneuver commander to learn the language of fire support. This handbook was intended to help him understand what he can expect from the fire support system. It also lets him know what information he needs to give his fire support officer to maximize his limited fire support assets. This manual was printed November 1988 and distributed down to the maneuver battalion level through pinpoint distribution.

What's New in Publications for Target Acquisition?

FM 6-161 Field Artillery Radar Systems will be combined with **FM 6-121 Field Artillery Target Acquisition**. The new manual will be **FM 6-121 Tactics, Techniques and Procedures for Field Artillery Target Acquisition**. The final draft is currently being edited, and the projected DA

printing is fourth quarter of 1990.

Where are the MLRS and Army TACMS Manuals?

The multiple launch rocket system (MLRS) is here, and the Army tactical missile system (Army TACMS) will be here soon. When will I get the manuals?

TC 6-60 MLRS Operations was published in September 1988. Change 1 to TC 6-60 revised Chapter 12, "MLRS Firing Safety," which aligned safety procedures to tactical firing realism. This change was published on 28 September 1989. Change 2 to TC 6-60 will cover the Army TACMS. The DA printing is projected for the second quarter of 1992.

Why Does it Take so Long to Publish a Manual?

Currently, the Field Artillery School is operating under an 18-month cycle from concept to the finished product to be mailed to TRADOC for DA printing. What are the steps? The department responsible for the manual writes the preliminary draft and sends it throughout the Field Artillery School for comment. The manual, updated with the comments from the School's different departments, becomes the coordinating draft. At this time, the coordinating draft is sent to selected units in the field, CAC and other service schools and then back through the Field Artillery School.

A one-week working group is then held. The working group has personnel from selected field units, the different directorates of the Field Artillery School and the subject-matter experts of the directorate responsible for the manual. At the end of this working group, the manual is presented to an executive committee (EXCOM), which resolves any issues and gains the approval of the Commandant.

Once approved by the Commandant, the manual is called the final draft and can take one of two routes. If the manual must be approved by higher headquarters, it's sent to CAC. Otherwise, it goes to the Publications Branch of the Field Artillery School for editing. Once the manual is edited, the camera-ready copy is prepared and shipped to TRADOC for contract DA printing. TRADOC funding dictates when publications are available through distribution.

Conclusion

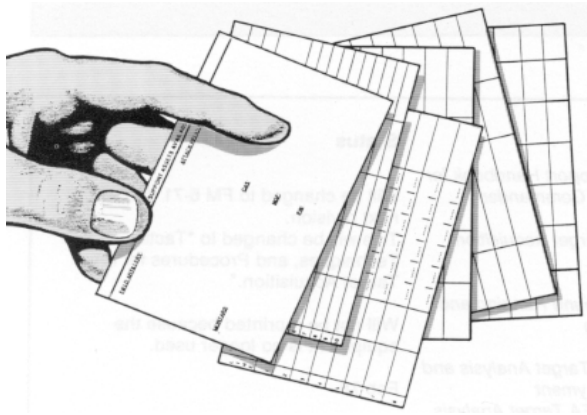
To ensure you get the latest copies of Field Artillery manuals, your publications account for pinpoint distribution *must* be accurate. See **DA Pam 25-33 The Standard Army Publication System (STARPUBS)** for revisions to the DA 12 series forms, usages and procedures subscription forms, to make sure your account is up to date. We at the Doctrine Division are not suppliers of manuals, but we can answer questions and direct you to the subject-matter

experts on any Field Artillery question.

If you have questions about these or other manuals or special texts, call the Doctrine Division, DOTD, at AUTOVON 639-4225 or 4240 or commercial (405) 351-4225 or 4240.

View from the Blockhouse features continue on Page 50.

Field Artillery Publications		Field Manuals	Status
Field Manuals	Status	TC 6-71 <i>Fire Support Handbook for the Maneuver Commander</i>	Will be changed to FM 6-71 during next revision.
FM 6-1 <i>TACFIRE Operations</i>	Was incorporated in TC 6-40A.	FM 6-121 <i>FA Target Acquisition</i>	Title will be changed to "Tactics, Techniques, and Procedures for FA Target Acquisition."
FM 6-2 <i>FA Survey</i>	Nov 86	FM 6-122 <i>FA Sound Ranging and Flash Ranging</i>	Will not be reprinted because the equipment is no longer used.
FM 6-11 <i>Pershing II Firing Battery</i>	Won't be reprinted because of the Intermediate-Range Nuclear Forces (INF) Treaty.	FM 6-141-1 <i>FA Target Analysis and Weapons Employment</i>	Feb 78
FM 6-12(C) <i>FA Battalion Command, Pershing</i>	Won't be reprinted because of the INF Treaty.	FM 6-141-2(C) <i>FA Target Analysis and Weapons Employment</i>	Sep 80
FM 6-15 <i>FA Meteorology</i>	Aug 78	FM 6-161 <i>FA Radar Systems</i>	Will be incorporated into FM 6-121.
FM 6-16 <i>Tables for Artillery Meteorology Messages</i>	May 79	FM 6-300 <i>Army Ephemeris</i>	May 87
FM 6-16-1 <i>Tables for Artillery Meteorology (Sound Ranging) Messages</i>	May 79	Field Circulars	Status
FM 6-16-2 <i>Tables for Artillery Meteorology (Visual) Messages</i>	Jan 82	Field circulars were eliminated as a production medium; however, the FCs in the current inventory will remain valid until superseded, rescinded, expired or incorporated into an FM or TC.	
FM 6-16-3 <i>Tables for Artillery Meteorology (Electronic and Visual) Messages</i>	Jun 82	FC 6-1-2 <i>The Gun Display Unit (GDU)</i>	Was incorporated into TC 6-50.
FM 6-16-4 <i>Tables for Meteorology Data System</i>	New; to be published FY 92.	FC 6-1-3 <i>TACFIRE Battalion SOP</i>	Valid
FM 6-20 <i>Fire Support in the AirLand Battle</i>	May 88	FC 6-1-4 <i>TACFIRE Div Arty, Corps TAC SOP</i>	Valid
FM 6-20-1 <i>FA Cannon Battalion</i>	Will have a new title: "Tactics, Techniques, and Procedures for the Field Artillery Cannon Battalion."	FC 6-20-10 <i>Fire Support Targeting</i>	Will be incorporated into FM 6-20-10. Will be FM 6-20-20.
FM 6-20-1J <i>FA Battalion</i>	Will be incorporated in FM 6-20-1.	FC 6-34-10 <i>The Targeting Process</i>	Will be incorporated into FM 6-20-10.
FM 6-20-2 <i>Division Artillery, FA Brigade, and FA Section (Corps)</i>	Will have a new title: "Tactics, Techniques, and Procedures for the Corps Artillery Headquarters, Div Arty and FA Brigade."	FC 6-40-2 <i>BCS Job Aids</i>	Was incorporated into TC 6-40A.
FM 6-20-2J <i>Division Artillery, FA Brigade, and Corps Artillery HHB</i>	Will be incorporated in FM 6-20-2.	FC 6-40-31 <i>BUCS Cannon Job Aids</i>	Was incorporated into TC 6-40A.
TC 6-20-5 <i>Family of Scatterable Mines (FASCAM)</i>	Was incorporated into FM 6-20-40 and FM 6-20-50.	FC 6-40-32 <i>BUCS Lance Job Aids</i>	Will be incorporated into FM 6-40-4.
FM 6-20-10 <i>Tactics, Techniques, and Procedures for the Targeting Process</i>	To be published 3d Q, FY 90.	FC 6-40-33 <i>BUCS Survey Applications</i>	Will be incorporated into FM 6-2.
FM 6-20-30 <i>Tactics, Techniques, and Procedures for Fire Support for Corps and Division</i>	Oct 89	FC 6-42-1 <i>Lance Positioning Doctrine</i>	Will be incorporated into FM 6-42.
FM 6-20-40 <i>Tactics, Techniques, and Procedures for Fire Support for Brigade Operations (Heavy)</i>	Jan 90	FC 6-42-2 <i>Floating Firing Points</i>	Will be incorporated into FM 6-42.
FM 6-20-50 <i>Tactics, Techniques, and Procedures for Fire Support for Brigade Operations (Light)</i>	Jan 90	FC 6-42-40 <i>Lance Extended-Range Gunnery</i>	Will be incorporated into TC 6-40-4.
FM 6-30 <i>Observed Fire Procedures</i>	Revision projected 3d Q FY 91.	FC 6-42-101 <i>Lance Planning Ranges</i>	Will be incorporated into FM 6-42.
TC 6-40 <i>FA Manual Cannon Gunnery</i>	Superseded FM 6-40.	FC 6-50-2 <i>Polaris 2 Reticle</i>	Was incorporated into TC 6-50.
TC 6-40A <i>FA Automated Cannon Gunnery</i>	Will be changed to FM 6-40-7.	FC 6-50-3 <i>Cannon-Delivered Chemical Munitions</i>	Was incorporated into TC 6-50.
FM 6-40-4 <i>FA Lance Gunnery</i>	Jul 87	FC 6-50-16 <i>M90 Chronograph</i>	Will be incorporated into FM 6-50.
FM 6-42 <i>FA Battalion Lance</i>	Mar 85	FC 6-50-19 <i>FA Cannon Weapons Systems and Ammunition</i>	Will be ST 6-50-19.
FM 6-42-1(C) <i>FA Battalion Lance</i>	Aug 78	FM 6-50-20 <i>Battery Executive Officer's Handbook</i>	Will be ST 6-50-20.
TC 6-50 <i>FA Cannon Battery</i>	Will be changed to FM 6-50 during next revision.	FC 6-60 <i>MLRS Battery Operations</i>	Was incorporated into TC 6-60.
TC 6-60 <i>MLRS Operations</i>	Will be changed to FM 6-60 during next revision.	FC 6-60-20 <i>MLRS Battalion Operations</i>	Was incorporated into TC 6-60.
FM 6-62 <i>Tactics, Techniques, and Procedures for Survival of Land Mobile Missile Systems</i>	New; to be published in FY 91.	FC 6-121-1 <i>Shell Reports/Crater Analysis</i>	Was incorporated into TC 6-50 and FM 6-121.
		FC 6-121-2 <i>Visibility Diagrams</i>	Was incorporated into FM 6-121 and will be incorporated into FM 6-30.
		Special Texts	Status
		ST 6-2-20 <i>AirLand Battle Survey Operations</i>	Will be incorporated into FM 6-2.
		ST 6-2-30 <i>FA Survey (BUCS), Revision 1</i>	Will be incorporated into FM 6-2.
		ST 6-30-30 <i>Copperhead Firing Procedures</i>	Will be incorporated into FM 6-30.
		ST 6-30-40 <i>Employment of the Aerial Fire Support Team (AFST)</i>	Will be incorporated into Fm 6-20-2.
		ST 6-50-60 <i>M109A3E2 Howitzer Improvement Program (HIP) Howitzer</i>	Will be incorporated into FM 6-50 and FM 6-20-1.



The Hasty Fire Plan

by Colonel Joseph P. Monko, Jr.

Light forces, especially those involved in air assault operations, need a quick, easy means of planning, developing, communicating and implementing a fire plan. The speed at which air assault operations are conducted and the large distances covered require the fire support system to be uniquely flexible.

Light fire supporters often operate with the materials and equipment they can personally carry, which leaves out most of the automated equipment currently available. The "Quick Fire Plan" from Paragraph 2-6 of *FM 6-20-50 Tactics, Techniques and Procedures for Fire Support for Brigade Operations (Light)* is useful in some instances. However, it does have severe restrictions. The principal one is it takes the direct-support battalion tactical operations center (TOC) and the other fire support officers (FSOs) out of planning and execution. The Hasty Fire Plan is a by-product of those requirements and concerns.

The original idea for the Hasty Fire Plan came from the "Forward Observation Officer's Notebook" used by our British and Canadian friends. Although the Plan was initially developed for air assault forces, it can help fire supporters from other units as well.

Pocket-Sized Notebook

Physically, the Hasty Fire Plan is a collection of the elements needed to complete a basic fire plan in a fill-in-the-blanks format. The various forms are covered with "combat acetate" to permit reuse, and they're small enough to be carried in the battle dress uniform (BDU) cargo pockets, ideally in a small notebook such as a flight crew checklist book.

A key point is that each fire supporter should build his own Hasty Fire Plan notebook based on his unit, mission and position in the fire support hierarchy. For example, a company FSO may have only one target list sheet, but a battalion FSO might have three—one for each of his companies.

As such, I won't try to tell you exactly what *your* Hasty Fire Plan notebook should look like, but I'll show you what probably are the minimum necessary items. You then can build your own tailored to your situation. At the minimum,

formats should include fire support assets available, target list, schedule of fires, priority targets and final protective fires, coordination measures and at least one execution matrix.

FIRE SUPPORT ASSETS AVAILABLE	
FIELD ARTILLERY:	ATTACK HELICOPTERS:
2-377 FA DS 18DE 32.30 W57 3,000 HE; 1,000 ICM; 30 MIN. SMK; 25 MIN. ILL	2 X AHI
6-119 FA (155T) R 2-377 32.50 T57 1,000 HE; 2,000 DPICM; 20 MIN. SMK; 15 MIN. ILL	2 X A10 (ON CALL) 1 X AC130 (ON CALL)
6 COPPERHEAD	
MORTARS:	MGE:
81 PLT 47.75 A57	NONE
	EW: NONE COLT 21 ATTACHED HNB FIST 37.75 J88

Figure 1: The Fire Support Assets Available format is a compilation of available, on-call or on-order assets. The amount and type of information included depends on the needs of the fire supporter completing the format. Some items you might consider including are units, radio frequency and call sign information, amount and type of ammunition available, missions by phase, limitations on use or anything non-standard.

FIRE PLAN		SUPPORTING	ORIGINATOR	MODIFICATIONS BY	
MARK		B/2-527 IN			
H-HOUR	SHEET	OF	DATE-TIME GROUP		
020525			01.1630 JAN 90		
TARGET INFORMATION					
L I N E	TARGET NUMBER (a)	DESCRIPTION (b)	LOCATION (c)	ATTITUDE (d)	REMARKS (e) (PRIORITY)
1	AC 3301	BUNKER	428840		COPPERHEAD
2	AC 3302	ROAD GATE	415852		PRI 1
3	AC 3303	ADA GUNS	428830		PRI 1
4	AC 3304	ADA GUNS	421814		PRI 1
5	AC 3305	ADA RADAR	424823		COPPERHEAD
6	AC 3306	BARRACKS	429825		PRI 2
7	AC 3307	HANGAR	416835		PRI 3
8					
9					
10					

Figure 2: The Target List is a copy of the one used in the Quick Fire Plan. A useful addition is to include a priority in the remarks column for each target.

LINE	ORGANIZATION (f)	FIRE UNITS (g)	TIMINGS (h)						REMARKS (i)
			-5	-4	-3	-2	-1	H	
1	2-377 (105)	A, B, C	AC 3307 2:16						HE/ICM
2	6-119 (155)	A	AC 3305 2		AC 3301 2				COPPERHEAD
3		B & C	AC 3304 24		AC 3303 24				DPICM
4									
5									
6									
7									
8									

Figure 3: The Schedule of Fires is a copy of the form used in the Quick Fire Plan. The inclusion of this form allows the Hasty Fire Plan to be used for Quick Fire Plan development, when appropriate.

PRIORITY TGTs / FPFs				
TARGET NO.	LOCATION	FIRE UNIT	SUPPORTED UNIT	REMARKS/CODE WORD
AC 3302	415852	A/6-119	B/2-527	GEORGIE
AC 3303	428830	B/6-119	" "	SAM
AC 3304	421814	C/6-119	" "	RUTH
AC 3301	423840	A/2-377	" "	LION
AC 3306	429825	B & C / 2-377	" "	TIGER

Figure 4: The Priority Targets/Final Protective Fires format is simply a tool for keeping track of these types of targets. Using the remarks column allows you to include planned or possible targets as well as actual ones.

COORDINATION MEASURES			
MEASURE	LOCATION	ESTABLISHING UNIT	EFFECTIVE DTG
ACA INFORMAL	NO INDIRECT FIRES WEST OF AIRPORT BOUNDARY ROAD	2-527 IN	020500
	(VICTOR)		
RESTRICTIVE FIRE AREA (RFA)	NO UNOBSERVED FIRES WITHIN 1K RADIUS OF 436860	1 BDE	020001
NO FIRE AREA (NFA)	AIRFIELD SURFACE	1 BDE	020001

Figure 5: The Coordination Measures format facilitates planning and keeping track of actual as well as on-call measures. Again, the amount of detail will depend on the fire supporter using the format. In an air assault unit, you may need to keep a separate format specifically for airspace coordination areas (ACAs).

Planning and Briefing Tool

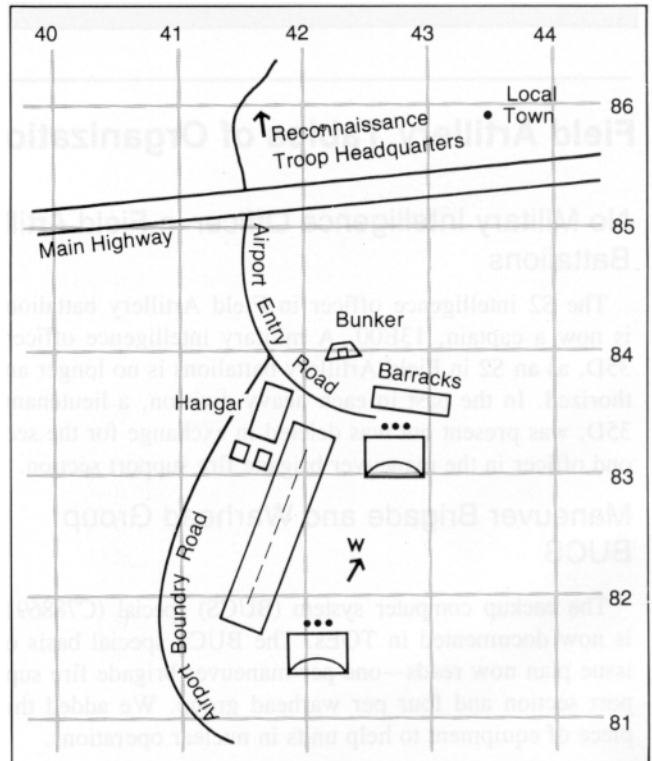
The Hasty Fire Plan is primarily a planning tool. It presents the basic elements of a fire plan in a logical sequence. You can complete these elements as the information becomes available to support a specific operation, or you can wait until you have all the information

you need to complete an entire plan. A side benefit is that it serves as a "memory jogger"—especially useful when the senses are dulled by long hours of continuous operations. Once completed, you can easily pass the information to other elements of the fire support structure.

In addition, the Hasty Fire Plan is a helpful tool in presenting briefings on the fire plan. By following the sequence of formats, you can brief the fire plan logically, ensuring you present appropriate information.

	PRE A ASLT	PREP	A ASLT	ASSAULT	CONSOLIDATION
1 PLT				FA PRI TGT AC 3302	A10 & AC130 ON CALL
2 PLT				FA PRI TGT AC 3301	
3 PLT				FA PRI TGT AC 3306	
BN SCOUTS			AH 1 ON CALL	BN MORTARS	FA PRI TGT AC 3303 AC 3304
PATH-FINDERS	COLT 2 / AC 130 ON CALL	DESIGNATE AC 3301 & AC 3305			

Figure 6: The Execution Matrix is the final format, simply a blank form you can use to complete an execution matrix. Experience will soon tell if you need one or more of these forms in your notebook.



This map shows the targets on the sample Quick Fire Plan forms in Figures 1 through 6.

Conclusion

In the execution of the plan, the Hasty Fire Plan is an easy-to-carry, quick reference. It lends itself to easy updating

as the operation unfolds and forms the basis for the follow-on fire plan. Including the Quick Fire Plan formats from FM 6-20-50 ensures you can implement this option rapidly, if needed.

The Hasty Fire Plan is not a replacement for a detailed "full-up" fire plan generated by all the automated devices available. You should always prepare detailed fire plans when time and resources are available. But hasty plans are handy, useful tools for light forces to use in the environment they're likely to operate in.



Colonel Joseph P. Monko, Jr., is Chief of Staff of the US Army Field Artillery Center, Fort Sill, Oklahoma. Until recently, he was Chief of the Surety and Management Division, Office of the Deputy Chief of Staff for Operations and Plans, Washington, D.C. He also served as Chief of the Field Artillery Assignments Branch of the total Army Personnel Command (PERSCOM), Alexandria, Virginia. He has commanded five batteries and the 2d Battalion, 320th Field Artillery, 101st Airborne (Air Assault) Division, Fort Campbell, Kentucky. In his 22 years on active duty, Colonel Monko has commanded units for almost eight years. He's scheduled to take command of the Field Artillery Training Center, Fort Sill, in July.

BATTLEKING Tactics, Training and Doctrine

BATTLEKING has received more than 256 ideas from unit-level personnel. This has resulted in more than 178 money-saving modifications to equipment or other methods and devices. While these changes are exciting, they represent only one aspect of BATTLEKING. Now that Field Artillerymen are getting comfortable with the concept of sharing good ideas about equipment, the time is right to examine those ideas that could enhance tactics, doctrine and training.

In these areas, as in all of BATTLEKING, anyone can submit an idea. Format is not important. What is important is to capture your ideas for improving tactics, training and doctrine so as to improve the Field Artillery.

When writing with your idea, give us an address and telephone number so we can contact you about your idea, if necessary. Send ideas, suggestions or proposals to President, TEXCOM Field Artillery Board, ATTN: ATCT-FAO (BATTLEKING), Fort Sill, Oklahoma 73503-6100.

Field Artillery Tables of Organization and Equipment (TOEs)

No Military Intelligence Officer in Field Artillery Battalions

The S2 intelligence officer in Field Artillery battalions is now a captain, 13E00. A military intelligence officer, 35D, as an S2 in Field Artillery battalions is no longer authorized. In the past in each heavy division, a lieutenant, 35D, was present but was deleted in exchange for the second officer in the maneuver brigade fire support section.

Maneuver Brigade and Warhead Group BUCS

The backup computer system (BUCS) special (C788691) is now documented in TOEs. The BUCS special basis of issue plan now reads—one per maneuver brigade fire support section and four per warhead group. We added this piece of equipment to help units in nuclear operations.

13Bs Replace Most 77Fs and 88Ms in Field Artillery Battalions

A recent Chief of Staff of the Army (CSA) decision will result in the removal of MOS 77F Petroleum Supply Specialist and 88M Motor Transport Operator from Field

Artillery battalions. The CSA directed the conversion of 88M and 77F to the primary combat MOSs in US Army, Europe's (USAREUR's) armor, Field Artillery, mechanized battalions, armored cavalry regiments and divisional cavalry squadrons. Conversion in USAREUR will begin in FY 91. Forces and Western Commands will convert at a later date.

In Field Artillery battalions, MOS 13B will replace all 77F and 88M as petroleum vehicle and heavy vehicle operators except for the following: one 77F E4 or E5 will be documented in each Field Artillery battalion TOE and one 88M E5 will be documented in each ammunition section. These two are necessary to provide continued expertise in petroleum operations and heavy vehicle operations.

More Information

If units have questions about these TOE changes, call the Documentation Branch, Organization and Personnel Division, Directorate of Combat Developments, Field Artillery School, Fort Sill, Oklahoma, at AUTOVON 639-3702 or commercial (405) 3702.

The North Korean Threat: Countering Brawn with Brains

by George T. Norris

Winston Churchill once described the Soviet Union as "a riddle, wrapped in a mystery, inside an enigma." It probably would have exceeded even Churchill's grasp of hyperbole to extend this analogy far enough to describe North Korea accurately.

Very little is known about this country, which is technically still at war with South Korea and the combined United Nations forces that came to South Korea's aid. It's interesting to note that while South Korea has become a modern economic power in the Pacific and the world, North Korea has changed little.

During 1945 and 1946, the Soviet union established a communist government in the portion of Korea they occupied. The army they established was organized and trained like the Soviet Army of the 1930s. The man they placed in charge of this country was Kim Il-Sung, then a Major in the Soviet Army.

More than 40 years later, Kim Il-Sung retains control of the country. The only post-war leader who is still alive, much less still in power, he has devoted his energies to unifying the entire Korean peninsula under his control. He has built a military force that's the seventh largest in the world—an army almost as large as that of the United States but drawn from a population that is less than one-tenth the size.

The US commitment to the defense of South Korea is small both in relative and absolute terms when measured against our commitments elsewhere in the world. With only limited assets, the US must employ them to the best advantage, capitalizing as much as possible on the problems and limitations of the North Korean forces. This article briefly discusses North Korea's field artillery

capabilities and proposes a few ways to counter them.

Their Brawn

Although more modern than during the Korean War, the North Korean Army still has a simple approach to the war they hope will unify the peninsula. The three more-or-less distinct phases of the battle would be the artillery preparation, the first-echelon attack with infantry and tanks and, finally, the second-echelon exploitation with tanks and mechanized forces. Overlaid on this would be the commitment of the more than 100,000 unconventional warfare and "commando" troops whose missions include reconnaissance, attack or seizure of critical positions and interference with South Korea's well-developed barrier plans.

The artillery, which plays such a predominant role in North Korean Army operations, is an extremely large force—more than twice the size of the artillery forces in the south. In fact, it outnumbers the entire US Army's artillery force, including that found in our Reserve Components. The weapons include towed and self-propelled cannons, rocket launchers and, understandably, a large number of mortars.

Mortars and Towed Artillery

The mortars and towed artillery of the North Korean Army are generally unspectacular in their performance, being copies of Soviet weapons introduced before 1960. There's no evidence they have modernized the systems since then, while the US and South Korea have introduced modern systems to replace each of the systems used during the Korean War (except the

107-mm mortar).

The forces in the South have an edge in terms of cannon ammunition diversity, which the North Koreans counter with a higher rate of fire, greater number of weapons and absolute range advantage. Perhaps the most important thing to remember about North Korean mortars and towed artillery is something demonstrated during the War—they can and will take the close support artillery anywhere.

For the crews of the North Korean 120-mm mortars and 122-mm howitzers, the Korean peninsula is flat. It's also too long for them to adequately support the attacking maneuver forces anywhere other than near the Demilitarized Zone (DMZ).



North Korean 120-mm Mortar Crews. The Korean peninsula is too long for the crews to protect their maneuver forces effectively.

It's here the towed artillery is intended to have its impact by opening holes in defensive positions during the first phase of the battle and supporting the attack of the first echelon. The towed artillery would be unable to support operations effectively beyond the DMZ.

Self-Propelled Cannons

The North Koreans plan to breach the defenses at the DMZ and then commit their second echelon to exploit success. To support the tank and mechanized forces, they have introduced a complete range of self-propelled cannons.

Generally comparable in performance to the towed cannons (the self-propelled systems such as the 122-mm and 130-mm guns and 152-mm gun-howitzer have the same range as their towed counterparts), there are two noteworthy exceptions. The 170-mm howitzer uses the D-30 cannon with a range of 15,300 meters while the older towed cannon is limited to 11,800 meters.

The 170-mm gun is uniquely North Korean and has the longest range of any cannon in service with any army. Capable of firing conventional projectiles to a maximum range of 40,000 meters, the 170-mm gun also fires a rocket-assisted projectile (RAP). Assuming the fairly standard capability of a 25 percent increase in range with RAP, the 50,000 meter range is at least equal to that of the Soviet 203-mm self-propelled gun 2S7.

Obviously, the North Koreans enjoy a range advantage over the artillery

forces in the South, as well as higher rates of fire for most systems. They do not, however, have any protection for the crews of these weapons, other than a small shield that surrounds the fighting compartment.

MRLs

Despite the number of cannons in their inventory, the North Koreans rely on multiple rocket launchers (MRLs) for high volumes of fire or saturation of targets. The rocket launchers in their inventory are principally 122-mm systems (either 30-or 40-round launchers), but they also have man-portable 107-mm MRLs and a new 240-mm MRL with a 40,000-meter range.

Although we know little about the new, heavy MRL, the 122-mm and 107-mm systems are familiar to everyone as they've been used to great effect by Iran, Chad, the Mujaheddin

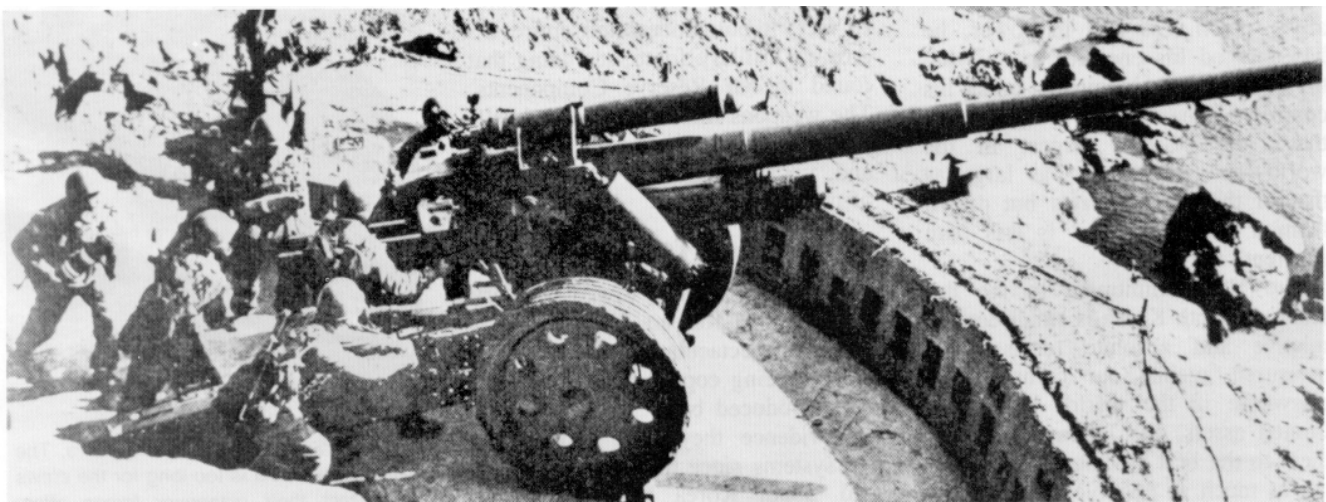
in Afghanistan and even terrorists in the Middle East. The systems are capable of high volumes of fire but have relatively flat trajectories and obvious firing signatures.

Our Brains

It's these features that seem to characterize North Korean artillery and present the thinking artilleryman with his first means of countering the North. In their desire to achieve an absolute range advantage over the South, the North Koreans have a preponderance of guns and rockets in their inventory. The flat trajectories of these weapons makes it virtually impossible to employ them effectively against targets in defilade. This requires mortars and howitzers, which then are limited in range by having to fire high angle.



The 170-mm self-propelled gun is uniquely North Korean and has the longest range of any cannon in any army—an estimated 50,000 meters.



These North Korean Coastal Defense Artillery Troops are using a World War II-vintage 105-mm gun.

Counterreconnaissance

Because the majority of North Korean target acquisition and battlefield reconnaissance is with ground-based observers, another possibility presents itself. If you can't locate units, you can't engage them. Although there are clearly limited numbers of positions that can be occupied by firing batteries, an effective operations security (OPSEC) program and counterreconnaissance can limit the number of observers capable of detecting and locating artillery units accurately. Often easier said than done, the alternative is to employ survivability techniques to minimize the lethality of fires delivered.

If the North Koreans can't get ammunition more lethal than fragmentation high-explosive (HE), then bermed firing positions will offer good (but not absolute) protection from point-detonating and ricochet fires. Frequent movement will offer some protection from manually directed fires. But if there are only a few acceptable firing positions, then one must limit movement.

High-Payoff Targets

Beyond the question of ensuring its own survivability, what can the Field Artillery actually do to help troops facing the threat of North Korean artillery fires? To be blunt, very little. The most important task for the Field Artillery is the destruction of the North Koreans' ability to deliver fires.

The first step in this process should be a mission area analysis such as that done for Europe. We can draw conclusions from these earlier studies and adapt them to the North Korean artillery. For example, the most valuable artillery target is the command and control headquarters.

The Chief of Rocket Troops and Artillery (CRTA) must be located and attacked as early as possible. This requires close work with military intelligence units to locate the detectable signatures of his command post.

Since it's unlikely the North Korean CRTA will obligingly present himself for destruction, the next targets should be the fire direction centers (FDCs), the observers and the ammunition vehicles and prime movers. The latter offers

more for the long-term than for the immediate battle as the North Koreans appear to have a severe shortage of modern, large-payload trucks.

But what of the weapons themselves? The easiest to kill are the rocket launchers, but these require quick-fire channels responsive enough to work in about 60 seconds. A possible alternative, again, would be to work with the military intelligence collectors to target trucks of all types, since they offer a good payoff whether they're transporting rockets or not.

The cannon systems to engage are those most critical to the success of the preparation—the howitzers and gun-howitzers. Their high rates of fire, lethality and high-angle capability must rank them ahead of other cannons—even to the possible detriment of the artillery duel.

Since we can limit the terminal effects of the guns and rockets by position selection, the Field Artillery must make the difficult decision to attack the systems most dangerous to the maneuver forces. Because of their relatively short range, the howitzers and gun-howitzers will be close to the line of contact, making them more easily detected, accurately located and easily ranged by our artillery.

Cannon Destruction

How best to destroy the cannons is a subject that will vary with every situation. Obviously, we can attack the crews quite easily since they lack protection. But this does nothing to prevent a new crew from firing the same weapon. Since the North Koreans may choose to fight from positions dug out of mountainsides, joint or combined-arms attacks may be the only way to guarantee destruction of the weapons. It may be desirable to slow the responsiveness of these cannons, providing more time to attack them and, possibly, reduce their effectiveness as well. The use of scatterable mines is often discussed, but they're in short supply and so easily countered by a prepared enemy in this situation.

One possibility is using smoke. A gunner who can't see his aiming point can't deliver fire. Although smoke is also

in limited quantity, it's more difficult to counter and a better use of a scarce resource in this instance.

The use of HE projectiles fitted with delay fuzes to rubble positions and, possibly, to ricochet into caves is both difficult to predict and to accomplish but would probably be better as a mix with air bursts than would point-detonating projectiles. Copperhead or other guided munitions seem to offer some hope of success, but if you can keep an observer alive that close, then it would be better to make it a combined-arms operation that attacks the position with direct fire.

The Challenge

It's clear the North Koreans have had a long time to perfect their abilities to employ massive amounts of artillery and survive counterfire. It's equally clear we must counter those abilities by effectively using fire support and combined-arms actions to capitalize on their vulnerabilities.

The North Koreans under Kim Il-Sung remain unpredictable and mysterious. We may never know the full range of North Korea's military capabilities or how much time we'll have to prepare.

What is clear is that the Field Artillery has a role to play that will require us to think clearly, plan meticulously and make difficult choices. We'll never be able to destroy all the North Korean forces, so we must employ limited assets to our best advantage—a challenge artillerymen in combat have always risen to.



George T. Norris is an Intelligence Research Specialist and also has been a North Korean Analyst in the Field Artillery Branch at the Foreign Science and Technology Center, Charlottesville, Virginia. He has been a Threat and Military Intelligence Instructor in the Tactics and Combined Arms Department of the Field Artillery School, Fort Sill, Oklahoma. Mr. Norris commanded an 8-inch battery and warhead detachment in West Germany, and served as the Operations and Intelligence Officer for the 210th Field Artillery Brigade, West Germany, and S2 of the 3d Battalion, 37th Field Artillery, also in the 210th Brigade.