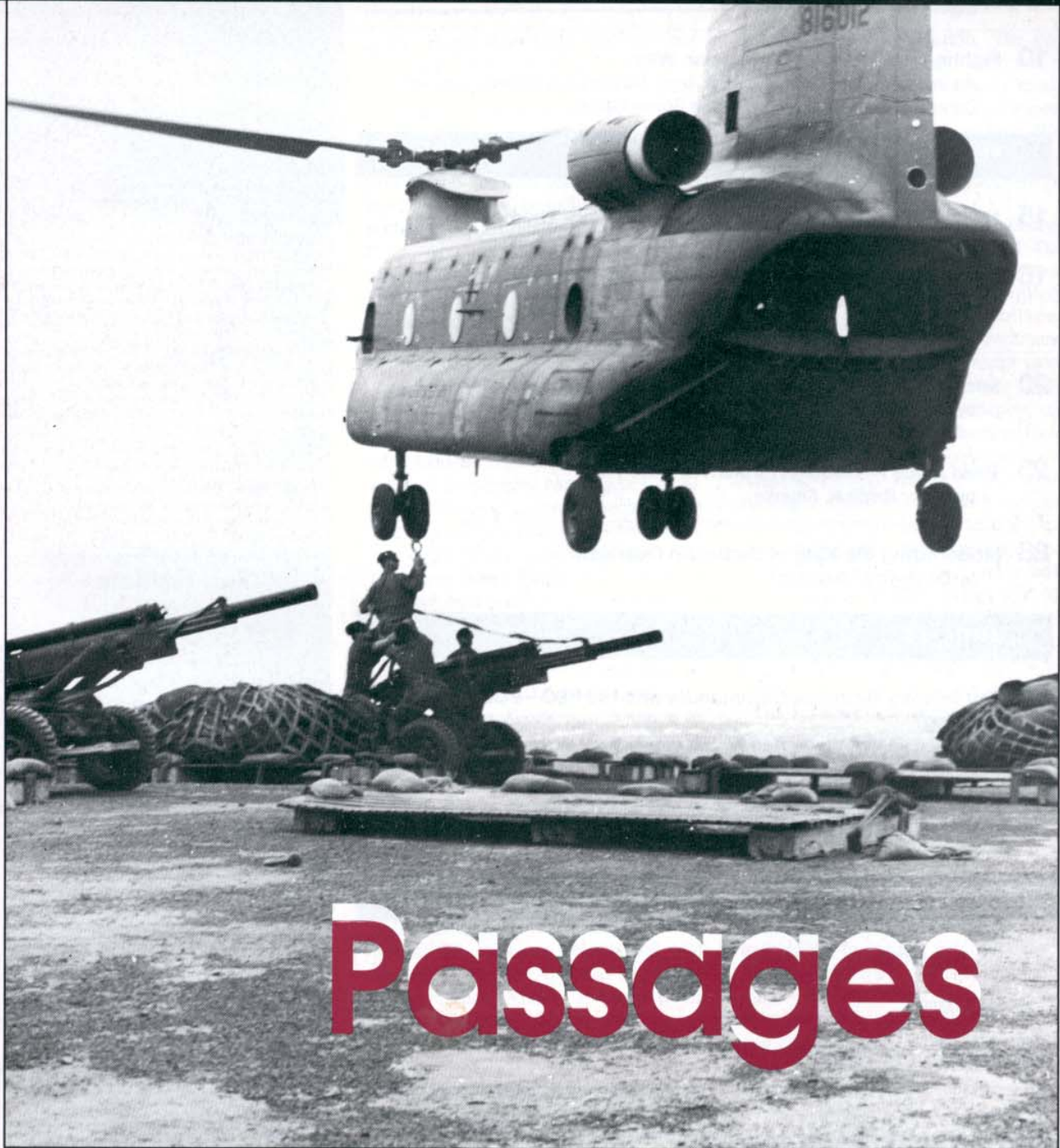




Field Artillery

A Professional Bulletin for Redlegs

August 1993





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Fire Support with 20/20 Vision

“With 20/20 vision, we must assess where we are today and continue our forward thinking with binos locked on the target of the future.”

As the Chief of Field Artillery and the Army's Fire Support Officer, I'm enthusiastic about the future of our Army and branch. We face many challenges as we forge ahead toward the 21st century. New roles and missions, the downsizing of our armed forces and an uncertain yet ever-present threat to peace and stability in many regions of the world are all challenges we must confront.

Mission First. Through all the turbulence, we must remain steadfast in our commitment to our all-encompassing mission: provide and coordinate devastating fires, giving the maneuver commander the overwhelming combat power to win decisively and quickly anywhere, anytime. As soldiers and Marines, we may receive orders to accomplish missions ranging from disaster relief to total war. However, we must never forget the number-one task on our mission-essential task list (METL): provide fires in support of combat operations—*Fire Support!*

Our dedication to the highest standards of tactical and technical proficiency will keep the Field Artillery on its rightful throne as the "King of Battle." Failure to do so may prove disastrous for our fellow soldiers and Marines—for our nation. The two greatest words a maneuver commander under fire can hear are, "Shot, Over." The mission is unchanged; we must continue our vigilance on remaining trained and ready to strike hard, fast and with precision throughout the depth of the modern battlefield.

Fort Sill plays an integral part in this most important undertaking. We're known

as the "Home of the Field Artillery," but even more importantly, we're the Free World's Center for Fire Support. This broader perspective gives us the focus to work issues, concepts, doctrine and training regarding the delivery and coordination of fires from all sources, including land, sea and air. The inclusion of representatives and instructors from the Marine Corps, Air Force and Allied nations gives this institution a joint and combined flavor. It also helps to ensure fire support speaks with one voice and sings in harmony across the services and throughout the Free World.

Squarely in Fort Sill's and the fire support community's "sights" lies the future. Since the day the School of Fire first opened its doors in 1911, Fort Sill has been committed to developing better tactics, techniques, soldiers, leaders and equipment. The fruits of these endeavors were reaped in every conflict from World War I to Operation Desert Storm. With 20/20 vision, we must assess where we are today and continue our forward thinking with binos locked on the target of the future.

The awesome effects of our fires in Desert Storm proved the supreme totality of fire support. Work must continue to further refine and enhance our ability to fight with fires. Our new strategy of a rapidly deployable, continental US (CONUS)-based force demands we further examine how we target and integrate fires—from all sources, into every phase of contingency operations.

The Field Artillery School, the Depth and Simultaneous Attack Battle Lab here at Fort Sill, our sister services and joint agencies such as the Air-Land-Sea Application Center (ALSA) at Langley Air Force Base, Virginia, are working aggressively on the issues effecting the employment of fires in the present and future. This continued cooperation will ensure we can employ the best available combination of integrated fires to their maximum potential on future battlefields.

Continual Modernization. The demands both of today's and tomorrow's battlefield require we continually modernize and improve our munitions, weapon systems and associated equipment. We cannot waiver in our goal of developing more lethal, survivable and deployable fire support systems.

The Field Artillery leads the armed forces in the digitization of the battlefield. The interim fire support automation system (IFSAS) and advanced Field Artillery tactical data system (AFATDS) will keep us on the cutting edge of the command and control revolution and ensure more timely and accurate fires for the force. Fielding the Paladin and developing our 21st century howitzer, the advanced Field Artillery system (AFAS) with its Field Artillery resupply vehicle (FARV), and associated munitions will push our cannon technology to vistas of lethality and survivability never before realized. Our efforts at improving rocket and missile systems center on deployability with the development of the high-mobility artillery rocket system (HIMARS) and greater range, lethality and precision in our munitions.

The research and development purse strings have begun to tighten, but we must continue to strive relentlessly for the best possible fire support systems. We owe this to our soldiers and Marines who must be ready to fight and win the next battle—*always*.

Leaders—The Future of Fire Support. Doctrine and equipment are of little value without trained soldiers, Marines and leaders to employ them. Fort Sill's Training Command produces the highest quality Redlegs our nation has ever seen. From entry-level training to the battalion and brigade Pre-Command Course, we prepare individuals to meet the challenges of the important business of fire support.

The "Fire Support University" uses innovative approaches like computer simulations, hands-on training emphasis

and small-group instruction to produce highly qualified Army and Marine fire support leaders. Fort Sill remains dedicated to producing the most capable Redlegs possible. We'll explore every avenue to better our methods and standards of instruction to meet the demands of our forces and the future, for our soldiers, Marines and leaders truly are the future of fire support.

20/20 Vision for the Year 2020. I'm proud to be your Chief of Field Artillery and the keeper of the keys to Blockhouse Signal Mountain. The future of fire support remains bright. We'll overcome the challenges of today by remaining focused on our responsibility to provide the maxi-

mum integrated combat power for decisive victory on the battlefield.

Remembering the lessons of the past, we must build and develop our doctrine, equipment and soldiers with a full and clear vision for tomorrow. This vision starts with the best trained, developed and led soldiers and Marines we can produce.

I enjoin each of you to lead with 20/20 vision to the year 2020 and beyond. You are our future. *Fire Support!*



Brigadier General (P) John A. Dubia became Chief of Field Artillery and took command of the Field Artillery Center and

Fort Sill, Oklahoma, on 15 June 1993. His previous assignment was as Director of Officer Personnel Management for the Total Army Personnel Command, Alexandria, Virginia. He has had 12 years of troop assignments where he commanded three artillery batteries, one in Vietnam; a direct support artillery battalion in the 1st Armored Division, Germany, and the 1st Armored Division Artillery. He also served as a Brigade Fire Support Officer in the 1st Infantry (Mechanized) Division in Vietnam. Other assignments include two tours in the Office of the Chief of Staff of the Army, Washington, DC; Executive Officer to the Commander-in-Chief of US Army Europe; and Executive Secretary for the Department of Defense, Washington, DC.

INCOMING

LETTERS TO THE EDITOR

Scout FISTs for the Task Force Deep Fight

There has been a great deal of discussion in the Army about the validity of the task force deep fight. The Combat Training Centers (CTCs) are stressing the need for the task force to kill with indirect fires as soon as scouts acquire targets. Where these targets "would be" killed is the task force deep battle area. I say, "would be" killed, as opposed to "are" because we currently aren't employing effective fires in this area. Part of the reason for this is units haven't dedicated the assets to service these targets.

I suggest that the scout FIST [fire support team] is the answer to the problem. The following is the CMTC [Combat Maneuver Training Center, Hohenfels, Germany] scenario in which Task Force

1-30 Infantry (TF 1-30) of the 2d Brigade, 3d Infantry Division (Mechanized), Germany, focused on this part of the battlefield.

In the early morning, a company FSNCO [fire support NCO] watched the BMP reconnaissance vehicle approach his target. He was aware of the opportunity he had to not only register his target, but also to deny the enemy knowledge of the family of scatterable mines (FASCAM) minefield he just called in.

He called in his mission on the BMP, placing the method of control as "Do not load." Two minutes later, the battalion fire direction officer reported, "Laid on target AD2001." In less than one minute, the target reached his trigger location. He requested "Cancel 'do not load.'" A CMTC fire marker drove up to the BMP as it approached the obstacle.

The FSNCO's registration (in reality 48 rounds of dual-purpose improved conventional munitions, or DPICM) killed the BMP 50 meters from the obstacle. Taking out the targeted BMP at AD2001 eventually led to the destruction of two MRCs [motorized rifle companies] of the attacking MRR [motorized rifle regiment] and enabled the task force to kill one MRB [motorized rifle brigade] forward of the main battle area. This created the conditions for our maneuver forces to win. The battle received high praise from the CMTC observer/controller team, and everyone left feeling a great sense of accomplishment.

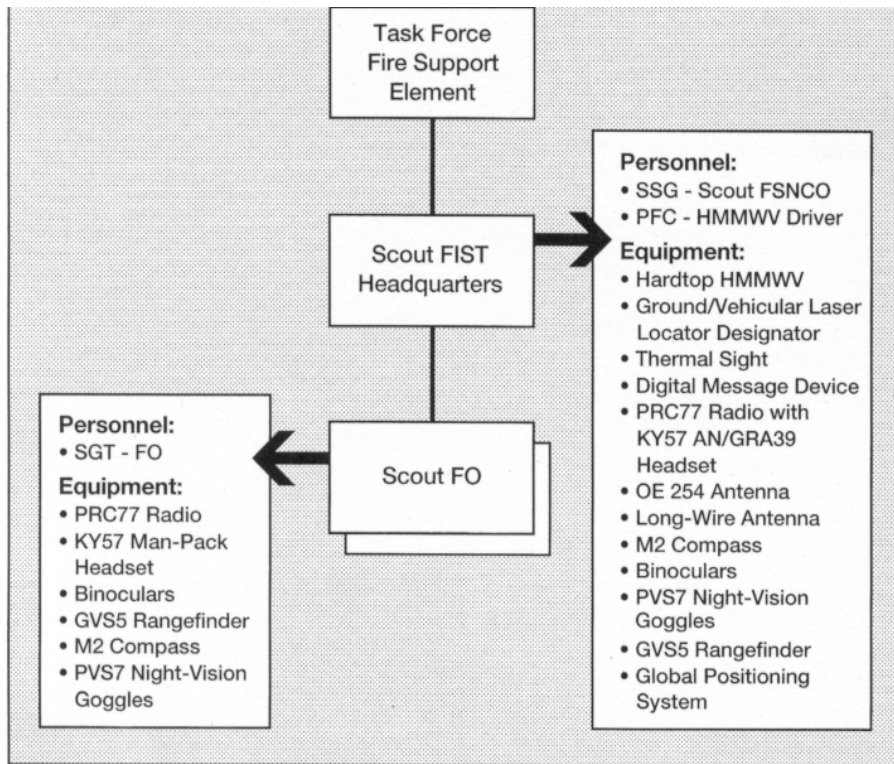
And what was the key to this success? It's impossible to credit one battlefield operating system (BOS) with the success of an operation. To destroy a MRR, we all knew every killing system had to be maximized. It became quickly evident that we had to kill throughout the depth of the task force's sector. The only weapon the brigade had to accomplish this at the FEBA [forward edge of the battle area] was the direct support (DS) artillery battalion. Artillery priority of fires was granted, giving the task force commander this deep-kill option. The only missing piece was resourcing FOs [forward observers] to begin the killing process beyond the visibility of the main battle positions.

Prior to the CMTC rotation, as different operations were war-gamed, we decided to give the task force FSO's [fire support officer's] HMMWV [high-mobility multipurpose wheeled vehicle] and driver to the senior FO. We pulled the additional three FOs from the mechanized FISTs and placed them in scout HMMWVs. We called these five soldiers the "Scout FIST." This provided the artillery eyes forward and, in the task force commander's mind, properly resourced the task force deep fight.

The Scout FIST Need. A school of thought is developing as a result of lessons learned from our CTCs. This school of thought says there are unexploited killing opportunities deep in the task force sector/zone—further that artillery is the primary killer of these targets. This school of thought lends credence to the validity of a task force deep fight.



Opposing Force BMP at the CMTC. TF 1-30 Infantry used a scout FIST to kill a BMP, leading to the destruction of a MRB.



Recommended reallocation of resources to field a scout FIST.

Placing FISTs with the scouts (as many artillery units have done) is in response to a need to get eyes deeper in the task force sector/zone. The brigade's main effort (indicated as priority of fires) focuses the deep fight for the brigade. The argument goes like this...

To look out beyond the main battle area, we currently have one COLT [combat observation lasing team] under brigade control, our task force scouts and, probably, a ground surveillance radar. All are tremendous assets. Scouts are doing great things as maneuver shooters. However, they leave a void if they have to move from a target before it can be attacked with fires.

Now, I don't want to belittle the importance of maneuver shooters. It's great to teach maneuver soldiers to call for and adjust fires, but why not resource our most lucrative targets (in terms of killing potential) with artillery observers? Thus, we have a need.

To be willing to resource this need and focus fires deep, we first must acknowledge the validity of the task force deep fight in which artillery is the primary weapon. It has been said by great maneuver commanders that a soldier should press the trigger on his hand microphone before he presses the trigger on his main gun—or more plainly, he should call-for-fire before he starts shooting his main

gun. To be an effective killer, indirect fires must have time to work. To get this time, we must start killing early. We must continuously pound the enemy from the time of initial acquisition until his destruction.

At the CMTc, the fire support observer/controller team now measures minutes of effective fire. They're trying to teach units the importance of killing early and continuously. To ensure artillery does its part, minutes of effective fire must be maximized. This means find the enemy early and continuously hammer him.

To start killing early, we must start processing targets early in the task force deep fight. We need artillery observers ensuring the right targets are nominated for attack. When this happens, indirect fires can be brought to bear early, providing maneuver forces effects to exploit. Thus, we have further justified our need.

Today, we have saturated the main battle area with observers (one per mechanized platoon by authorization). All these observers look at largely the same thing, which at the CMTc in Hohenfels is about two to three kilometers to their front. (In the offense, all the FO sees is the inside of the platoon leader's Bradley fighting vehicle.)

The bottom line is we aren't getting our money's worth out of our FOs. We ask armor platoon leaders to call their own

fires. We must ask the infantry platoon leaders to do the same. That will free up enough artillery observers and equipment to resource the task force scout platoon with a FIST. Thus, we have the assets available.

Based on the need and available assets, it becomes very easy to decide to put a FIST in the scout platoon. But what should it look like? What should they carry, and how should they carry it? See the figure for a recommended reallocation of resources to field a scout FIST.

Scout FIST Operations. The scout FSNCO may shadow the scout platoon leader or be employed as a task force COLT. As a fire support coordinator, his duties may include: refining targets for scout-emplaced point obstacles; assigning shooters to targets in the scout area of operations (to include backing up maneuver shooters); relaying calls-for-fire for the scout platoon (to include from other FOs as they only carry PRC77 radios); participating in fire support rehearsals for the scouts; and finally, directing FO moves to cover the most important targets with artillery observation.

The scout FIST also could function as a COLT, performing the same missions as any currently fielded COLT. The only difference is ownership. The task force commander has control over the scout COLT rather than the brigade.

The scout FOs ride along with scout squads and function, for the most part, as any one else on the team. The largest difference is their focus. When a scout FO gets to the target he's looking for, he directs the attack on the target and, if necessary, dismounts to stay with that target. Naturally, if an FO dismounts, linkup or pickup must be coordinated by the fire support section.

As Task Force 1-30 prepared for its CMTc rotation in February and March of 1993, the scout FIST was introduced. Scout FOs participated in local training and SIMNET [simulations network] training. The team NCOs trained the scout platoon in the TSFO [training set, fire observation]. They quickly developed a good relationship with the scout platoon leader. They performed just as the other FISTs did in preparation for the rotation. The cost of pulling these teams from the mechanized platoons was hardly felt at all, and their payoff was great.

To further the relationship of scout FOs and their platoons, live-fire training is being planned at Grafenwoehr Training Area. During this training, scouts and

their FOs will conduct live-fire training with the mortar platoon as well as with the 3d Battalion, 1st Field Artillery, the direct support battalion.

Scout FISTs are not, by themselves, the answer to success with fires on the battlefield. Without the basics (a well-synchronized plan, violent execution and such), any plan is destined for failure. Further, without adequately training our scout platoon leaders, scout FISTs would merely be in vehicles "on the loose," misguided

and not integrated into the overall collection and attack plan. The FOs serve no purpose without focus and guidance.

Conclusion. With a good plan behind them and good training under them, scout FISTs can be extremely valuable assets. They can mean success for a task force by integrating fires early and continuously. Their possibilities are exciting, and I'm sure they'll be the topic of many additional *Field Artillery* articles as well as future artillery doctrine.

The use of the scout FIST has been proven at the CMTC. The story in the introductory paragraph was true. An MRB had to be destroyed in total before the main battle area. Everything worked as planned, and it was the scout FSNCO who pulled the trigger on the first mission.

CPT Marc F. Mann, FA
Fire Support and Combined Arms
Operations Department
Field Artillery School, Fort Sill, OK

Commander's Intent and Fire Support Guidance

As a maneuver instructor in the Field Artillery School [Fort Sill, Oklahoma] who has had the pleasure of teaching many FA pre-command courses over the past three years, I have had the rare opportunity of interfacing with and learning from many of the Field Artillery's finest leaders. I have come to understand and appreciate the Field Artillery, the fire support battlefield operating system [BOS] and the interaction and dialog required between the maneuver commander and his FSCoord/FSO [fire support coordinator/fire support officer].

Prior to my Field Artillery School instructor assignment, I served as a tank battalion operations officer (S3) for 14 months. As an S3, I had difficulty working with my FSO; fire support never seemed to contribute to my battalion's fight quite as fully as I believed it could. Our fire support rarely was at the right place, at the right time, in the right amount. I know now that I played a significant role in that failure: inability to properly communicate the commander's intent and the commander's concept of fires.

Of the many things I learned and taught while at the Field Artillery School, I believe the most valuable was the linkage between the commander and his FSCoord/FSO. As a battle captain who might have been overly preoccupied with the other BOSs (specifically, maneuver), I could have benefitted greatly if I had had a concise outline to guide my input into the fire support system.

As most of you have already experienced, the first casualty of a tactical operation is the grandiose scheme of maneuver—the *plan*. Therefore, every officer (especially, commanders and their FSCoords/FSOs) who attends an OPOrd [operations order] briefing must come away with an absolutely clear understanding

The Commander's Intent *must* convey—

1. The commander's battle space: his vision of lethality projection. It should answer the question "What do I want to do to the enemy?" and articulate more than just "defeat the enemy." It should not refer to a specific scheme of maneuver or to specific organizations.
2. What must be accomplished, when and why.
3. How the commander intends to shape the battle to his advantage in terms of both time and space.
4. The critical enemy vulnerability (center of gravity) he believes will lead most directly to mission accomplishment.
5. Places and times in the fight that are critical.
6. Desired end state in respect to time, force, enemy and terrain.
7. Commander's special concerns.

of the unit's mission and the unit commander's intent.

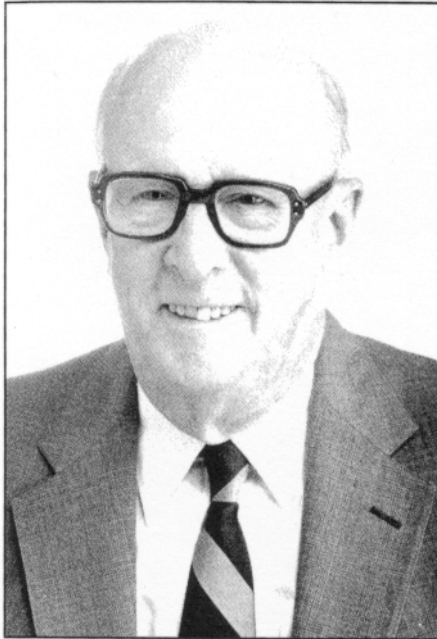
The "Commander's Intent" (enunciated in Paragraph 3 of the OPOrd, immediately after the "Mission Statement") is applicable to everybody, not just maneuver soldiers, and is not the same as the commander's guidance/"intent" for fire support (best enunciated up front in the "Fires" portion of Paragraph 3). None of us can do our jobs properly if we don't understand the basic concept of what our commander wants accomplished. If he fails to communicate this, it's our job to draw it out of him. Armed with this information, even if the plan dissolves, we should still be able to accomplish the mission, using the five tenets of AirLand operations: agility, versatility, initiative,

The Commander's Fire Support Guidance *must* convey—

1. What the commander wants fire support assets (including organic mortars) to accomplish in the battle: how fire support will influence the battle and support the scheme of maneuver. It must link the support to specific areas/phases of the battle or to key terrain.
2. The type of targets to be engaged and the desired effect on each (target damage assessment/TDA) and what fires should do to the enemy (suppress, disrupt, delay, neutralize or destroy).
3. The force protection priorities and counterfire priorities.
4. The requirements, restrictions and priorities for special munitions, such as DPICM [dual-purpose improved conventional munitions], smoke, FASCAM [family of scatterable mines], Copperhead, etc.
5. The places and times in the fight when fire support is critical.
6. The commander's special fire support concerns.

depth and synchronization. As I leave Fort Sill for my next assignment, I offer these tools—concise outlines to guide the commander—for Field Artillerymen and fire supporters to take to their maneuver commanders. You must be the teachers who help your maneuver brethren better understand, communicate and synchronize the fire support piece of combined arms combat power.

LTC John M. Mach, AR
Force Development, ODCSOPS
HQDA, Washington, DC



General (Retired) Walter T. Kerwin, Jr.,
Former Vice Chief of Staff of the Army

Yesterday and Today: 50 Years of the Army

Interview by Patricia Slayden Hollis, Managing Editor

Q Please give snapshots of the Army and Field Artillery, starting with your commissioning in the Field Artillery in 1939.

A As I look back over the last 54 years, it's absolutely amazing to me to realize how far the Army has come in terms of weapons technology and the professionalism of the soldier and officer. When I graduated from West Point in 1939, I was stationed temporarily at Company Din the 1st Infantry Division, 16th Regiment at Governor's Island in New York. There weren't enough captains at the time because the Army was expanding, so I became a company commander—a lieutenant with about six weeks of service.

Our company daily routine was to inspect the barracks and men and supervise the maintenance of the company equipment. Each Wednesday afternoon, we had compulsory athletics. Each Saturday morning, we had what we called "SI"—Saturday inspection. Every soldier took his pup tent, weapons and personal equipment and spread them out on the field for inspection. I tried to limit SI to an hour and a half because I wanted to make it to the football games up at West Point. We only went to the field two weeks in the

summer, and then it was some place nearby.

I shudder to think of the responsibilities that today's lieutenant, captain and lieutenant colonel have compared to my early days. They have to be prepared to deploy entire units quickly worldwide and fight in operations such as Just Cause or Desert Storm. Whereas, in 1939, I couldn't have taken anything anywhere. And I sincerely doubt if any of our more experienced company or battery commanders, many of whom were in their 40s, could have deployed a unit—I know they couldn't have fought much of a battle if they had gotten there. That was my first blush of the Army.

Later in 1939 at Fort Lewis, Washington, I had my first artillery assignment. But when I reported in to my

George Washington?" He was fairly typical of an old-time battery commander who had served in World War I.

I happened to be in a 155-mm Schneider howitzer outfit, and ammunition was scarce. I don't think I fired more than about 10 complete problems in the two and a half years I was at Fort Lewis—that's how scarce ammunition was. As a matter of fact, we usually didn't fire problems by ourselves.

When we went to the range, the regimental commander and all the lieutenants and captains dressed in blouses with Sam Browne belts and riding boots lined up in folding chairs on the OP [observation post]. Somebody started the problem—the registration. Then, right in the middle of the registration, the

regimental commander turned to someone else and said, "You pick up the problem," and he fired part of the problem. Then another lieutenant fired. A lengthy critique was conducted after each fire mission. We were lucky if we fired a total of 10 problems in one day on the range. That gives you an indication of just how scarce the ammunition was and what the leadership was like.

People, talk about the quality of people today—it's absolutely fantastic compared to what we had in those days. I look in admiration at how well the Army synchronizes all elements on the battlefield. When I first came into the Army, the fire support "elements" were the artillery, a few Piper cubs for observation, and once in a while, the Army Air Corps dropped several bombs—a tremendous difference compared to today.

In 1940, we loaded on ships at the ports of Seattle and Olympia and sailed on our first division amphibious exercise, landing

“When I first came into the Army, the fire support 'elements' were the artillery, a few Piper cubs for observation, and once in a while, the Army Air Corps dropped several bombs—a tremendous difference compared to today.”

battery commander, he refused to accept me. He first assigned me to a gun section, then a communications section and all the other components of the battery until those section chiefs chopped off that I really understood what was going on—then and only then did the battery commander receive me.

He was an elderly guy, in his 50s, and had been a captain for 18 years. As a matter of fact, he had been an aide to President Harding. When I went home that first night after I met him, I asked my wife, "Was President Harding *before* or *after*



at Gigling Gate Ranch, what is now Fort Ord, California. We landed on the beach in the old whaling-type long boats, and as a battery executive officer, I jumped over into the surf in a long, heavy Horsman overcoat and Peale boots. Every officer had beautifully shined Peale boots—the *piece de resistance*. Dressed like that, you can imagine what it was like to jump into the surf and then walk all the way inland to the first battery position. That's how elemental we were.

In 1950, the Korean War started. Everybody knows about Task Force Smith. The Chief [of Staff of the Army] talks about "No more Task Force Smiths." Well, let me tell you one of the reasons Task Force Smith failed. In World War II, we had the 2.36-inch anti-tank rocket bazooka—it didn't work against the Germans. So, work began on the 3.5-inch rocket. But the war ended before the 3.5-inch rocket went into production, so they stopped developing it.

When Brad Smith's battalion task force left Japan for Korea, it had the old World War II 2.36-inch rocket bazooka. The task force had to fight the North Koreans with equipment that had proved ineffective in World War II.

You *don't* send American troops into combat with equipment that's ineffective and expect to win. But we had drawn down the World War II army and had cut modernization. If we're not careful, the Army could fall into the same trap with all the force structure and budget cuts.

Secretary of Defense Les Aspin recently indicated his concern about the possibility of "hollow forces." We've got to maintain high-quality people equipped with the best technology to meet the requirements of future sophisticated battlefields.

Then in the late 50s, the Army began more and more to appreciate increased effectiveness when artillery, infantry, armor and the rest of the branches worked together. The first time I experienced it was in 1958 at Fort Bragg, North Carolina, where I commanded the 56th Artillery Group. In my group, I had a tank battalion, which was most unusual. I also worked very closely with the XVIII Airborne Corps. We went on maneuvers down to Panama, off to Puerto Rico and other places. Following Korea, the Army had begun a major effort to get the various arms together in combined arms training.

Now today, of course, you don't just have infantry-artillery-armor (combined arms) operations, you also have joint operations

“ We've got to keep finding new ways to fight with less money, fewer soldiers, fewer casualties and fewer days in combat. ”

with the Marines, Navy and Air Force; combined with our allies; and coalition warfare as in Desert Storm. The synchronization of the whole machine, the complexity of operations is really impressive.

In the not too distant past, the Army had a responsive budget and a larger force and could afford to train and exercise these complex operations. But now the budget is smaller—in "free fall"—and so is the size of our force. Distributed Interactive Simulations that network forces, posts and bases worldwide to enhance our combat readiness—something we never even thought about in my early days—have become much more important.

When I came into the Army, you had an artillery post, Fort Sill, and an infantry post, Fort Benning—but never the twain would meet. They barely talked to each other. Today, you have joint maneuvers throughout the world, six battle labs at various posts coordinating to test new concepts and Louisiana Maneuvers, the ultimate laboratory for future warfighting. We've got to keep finding new ways to fight with less money, fewer soldiers, fewer casualties and fewer days in combat.

Q *During World War II, with the 3d Infantry Division campaign in Africa, Sicily, Italy and France, what was the most frustrating challenge you faced?*

A The most frustrating challenge was dealing with the large number of casualties: 70,425. Since a division was 15,000 soldiers, plus or minus, the 3d Infantry Division lost and replaced almost five division's worth of people in World War II. Of course, some of the non-battle casualties returned to duty.

At Anzio Beachhead, I massed about 28 battalions—comparatively easily because each of our guns could cover almost the entire beachhead. We sometimes fired more than 20,000 rounds a day from one little Div Arty [division artillery]. Ammunition had to be rationed as everything came by ship.

From D-Day January 22d until March 25th, we spent 67 consecutive days in the Pontine marshes' bitter cold weather before withdrawing for two weeks to a "rest area" near the beach. Even there, we were under daily artillery fire and air attacks. In those marshes, you couldn't even dig a proper foxhole because of the water; soldiers had trenchfoot and all sorts of medical problems. So, we not only had battle casualties, but non-battle casualties. Sometimes, we had more non-battle casualties than battle.

No matter where the division fought, from Africa to Germany, we would go back to a rest area for two to three weeks after many days of combat and receive an influx of new people, trainees, who had never seen combat. You tried to assimilate the trainees, bond the unit, and then went back into combat again. For the "old" combat vets, the question was, "When will it all end?"

The difference between World War II and Desert Storm, Just Cause or Grenada was that soldiers could see the end of combat in the latter three. Each was over in just days. The psychological and frustrating part of a war such as World War II is that you can never see the end. The only progress you see is that you're moving.

That was one of the difficulties we had in Vietnam. We didn't move; we stayed in one place. Progress was difficult to measure.



LTC Kerwin at the entrance to an underground fire direction center at Anzio Beachhead, April 1944.

One technique to overcome such psychological effects of war is bonding in a unit. Let me give you an example of what happened in the 3d Infantry Division—I'm sure it happened in other divisions too. Many of the vets who went into Africa, then Sicily and Italy, the old-timers, just took off—went AWOL—when the division pulled back to rest. They got fed up with fighting. But as soon as the word got around the division was going back into combat, an amazing number of those soldiers returned to the division. They were committed to their units, to other soldiers. They had bonded with their outfits. The pull of the outfit and their old buddies, even though a lot were gone, brought those soldiers back into combat, once again.

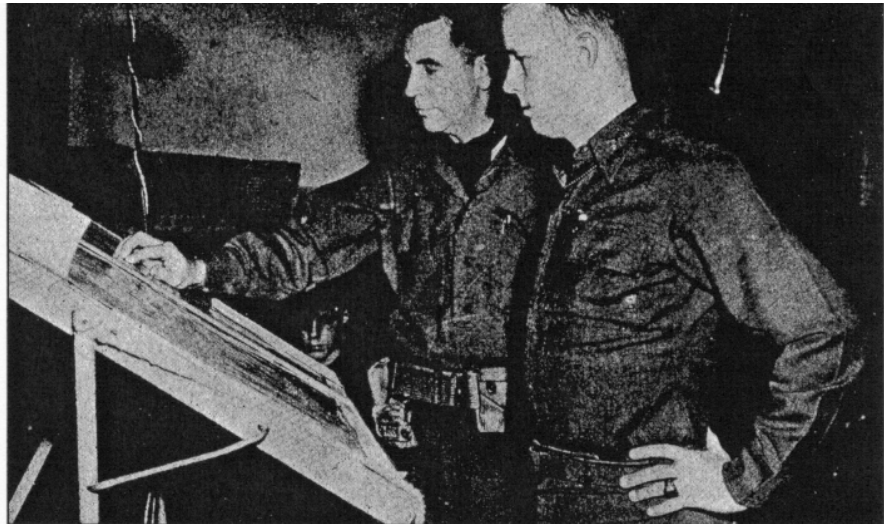
Let me give you another example. After leaving Africa for Sicily, we bounced around in our boats for a couple of days during a big storm. The invasion was delayed. I became terrible sick, but I wasn't seasick. When we landed in Sicily, they took out my appendix, right smack on the beach. At first, they didn't know what was wrong with me, so they just cut around until they found out. Next they put me on one of the big barges just off shore where they put all the casualties. I laid out there on a stretcher for a day and a half while waiting for a British hospital ship. They shipped me back to a big hospital center near Bizerta where, a couple of days later, a captain from the Adjutant General Corps came to talk to me.

I said, "What are you interviewing me for?"

He said "The theater policy is that regular officers could not be concentrated in regular divisions." Now, he wasn't only talking about regular officers, he was talking about combat-experienced officers. They were going to reassign me to a newly arrived reserve division.

"Screw that, I'm not going to any other division—reserve, active or whatever!" I thought to myself as I answered all his questions with a straight face.

So four days after my operation, at 0200, I quietly got my uniform, walked out of the hospital to the road and flagged down a passing jeep. The jeep took me to the port of Bizerta, and I found an LCI [landing craft, infantry], a very small boat, commanded by a lieutenant who was headed for Palermo. The division at that time had captured Palermo and was fighting along the north shore of Sicily, headed for Messina in preparation for further



General Sexton, CG of the 3d Infantry Division Artillery, discusses an artillery problem with his S3, LTC Kerwin, somewhere in the Voges.



Major General Pugh, CG of the 3d Armored Division, confers with Brigadier General Kerwin (1962).

combat in Italy. After I got to Palermo, I made my way back to the 3d Infantry Division, which was in pretty heavy combat about halfway to Messina.

I was in the division in combat as the Div Arty S3 for about four or five days—no stopping for recuperation—when I was ordered in to see the division commander—"Iron Mike" O'Daniel, a commander who had earned his nickname. I reported in.

"I've got a report here that says you're AWOL in combat and they're looking for you," he said. (Maybe they thought I had deserted.)

"Yes, Sir."

"What did you do that for?" he said.

"Sir, do you know what they were going to do to me? They were going to assign me

to another division." (I had been in the division for three and one-half years.)

"Forget it," Iron Mike said.

So, I'm probably one of few soldiers who has "AWOL in Combat" on his record. The point of the story is that I had bonded with my unit—I felt the same pull that all soldiers in combat feel when they bond with their units.

Today, we hear a lot about the importance of cohesion. Cohesion bonds the soldier.

Q What was the impact on the Army of the introduction of nuclear weapons in the 1950s?

A At first, people felt you had to be a Ph.D. just to work on targeting and assembling nuclear weapons and that you had to have an undue amount of training. Actually, using battlefield nuclear weapons is comparatively simple. Gradually, as various types of tactical nuclear weapons came into the inventory, the training became more simple and diversified, less mysterious or intimidating. More people got the Prefix 5 for atomic training. As things developed, small battlefield nuclear weapons became "normal" down at the battalion level.

Today, what concerns me about nuclear weapons is that we've withdrawn all tactical nuclear weapons from the Army. With the potential proliferation of nuclear weapons, including in Iraq, we could face an enemy on the battlefield who will use nuclear weapons against us.

What would the US public have said if, during Desert Storm, we had faced Iraq, a country known to be developing nuclear



weapons, with no tactical nuclear weapons of our own? What would we have done if Saddam Hussein had used nukes against our forces—used strategic weapons in retaliation? The answer is, "No, we would not have."

Now, I'm not promoting nuclear warfare and believe we must carefully restrict the number and use of such weapons. Using precision munitions with their surgical capabilities is much better than dropping a 15- to 20-kiloton blast on an area with contamination and collateral damage problems. At the same time, for our own good, we must be aware of potential problems with completely eliminating tactical nukes.

Q *What were the most significant challenges you faced as the commander of 2d Field Force in Vietnam?*

A In Vietnam, generally speaking, we were on the strategic defensive. The American people don't align themselves with that defensive mode, one they can't see an end to. And the American soldier isn't "built" for that; he's built for offensive warfare, gung-ho. We lost the support of the American people.

In Vietnam, we drafted soldiers to fight in an unpopular war. That fact and the drug problems we had with soldiers at that time set the stage for "fragging." We had fraggings in which enlisted soldiers killed officers with hand grenades. Discipline had broken down.

One big problem was the one-year tour. Including the time it took for a soldier to get acclimated in his unit, go on R&R, and then get ready to go home, he might have been effective in his unit for 10 months—maybe less. We should never have had one-year tours.

A part of this problem was an officer usually commanded a company or battalion

“Right now, our budget is in free fall with more cuts to come. Under those conditions, effective force structure and strength planning borders on the impossible.”

for only about six months and then moved back to a staff position (or vice versa). The command should have been longer—the enlisted man fought with the same unit for about 10 months.

When you command a unit for six months, it's awfully difficult to keep yourself from doing things to make that outfit "look good" for those six months. But you won't be there to see the consequences of your actions down the line. In World War II, you fought your battalion for years in hard combat—not moving in and out of, say, fire support bases. Commanders had entirely different mindsets in World War II and so did their soldiers. They were all in it together for the long haul.

Q *What did we learn from Vietnam that we apply today?*

A Several things, but the most obvious is the application of total combat power as demonstrated in recent operations. In Vietnam, politically, we weren't allowed to attack enemy ground forces outside of Vietnam, except in a few cases. As a corps commander in Vietnam, I used to get in my chopper, fly about 20 minutes, see the enemy just across the Cambodian border and couldn't do a damn thing about it. We weren't allowed to apply maximum combat power when and where we needed to defeat the enemy; we had all sorts of rules of engagement. We were allowed to bomb,

and then we weren't allowed to bomb—we piecemealed our combat power. That was all part of the defensive attitude and one of the reasons we "lost" the war—not militarily, but psychologically.

We learned from Vietnam. As a result, Schwarzkopf [General Norman Schwarzkopf, Commander-in-Chief of Central Command and Desert Storm] asked for all the combat power he could get his hands on and permission to use it for decisive victory. Rightfully so. He had overwhelming power, probably more than he needed. But what was the result? A victory in 100 hours and the entire nation ecstatic. We did the same thing in Just Cause in Panama when we attacked many objectives simultaneously under General Thurman [Maxwell R. Thurman, Commander-in-Chief of the Southern Command].

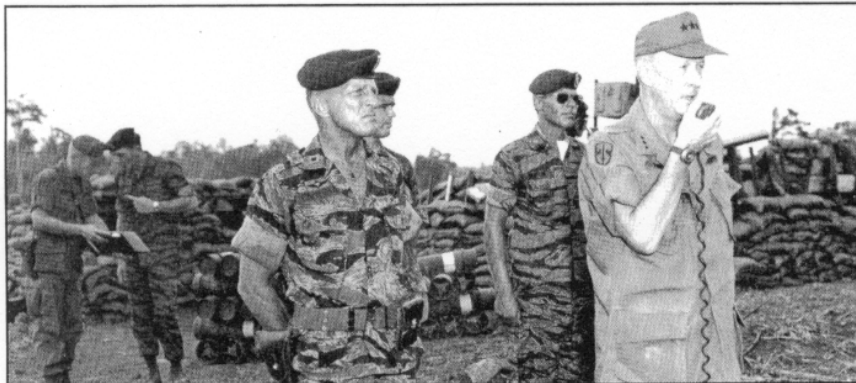
We intended to apply that lesson in Somalia: go in there with all the resources you might need, do the job (in this case peacemaking) and get the hell out. But things aren't working out that way. That's why we must be very, very cautious about moving into Bosnia-Herzegovina. We must first ask, "Can we go in there with overwhelming combat power, do the job and get the hell out?" We could easily get bogged down in there, just like in Vietnam.

Q *With the budget cuts and force reductions, what cautions would you suggest to avoid creating a "Hollow Force" or another such negative epithet?*

A The problem is in the question: How do you avoid it—how do you know when you've gone too far? Right now, our budget is in free fall with more cuts to come. Under those conditions, effective force structure and strength planning borders on the impossible.

The public doesn't see that we face any kind of a threat, so they ask, "Why do you need such a large Army?" We're liable to make the same mistake we made after World War II.

In March of 1945, I saw that same process at the Pentagon as a Staff Officer



LTG Kerwin, CG of the 2d Field Force in Vietnam, talks to Special Forces troops (1968).



General Kerwin, CG of Forces Command, receives a briefing in Alaska.

“...overall, the combat readiness of the force rises (or falls) proportionately with soldier quality.”

in the Operations Division of the War Department General Staff. During my time there, we came down from almost 10 million soldiers in the Army, including Army Air Corps, to a very, very small post-World War II force. It was very difficult to tell the American people that we might have to go to war again. So we ended up with the Hollow Army in Korea in 1950. We had just bottomed out.

From 1969 to 1972, I was the DCSPER [deputy chief of staff for personnel]. With the drug problems, draftees, one-year tours and breakdown in discipline in Vietnam, the Army had deteriorated in terms of the quality of people. Again, the American people were not behind what the Army was doing. I kept telling everyone that I could see the quality of people come down, and that at some point, the Army was going to start to deteriorate.

Today, when I talk to my compatriots, active or retired, I tell them you can't tell where that crossover point is until after you've crossed it. The process is like maggots eating into the system.

You say, "Yes, Sir, Mr. President (or Senator or whoever), yes, we can do that. Yes, we can fight another Iraqi war. Yes, we can fight one and 'one-half' wars." It's all "can do." But at some point, the quality of the people drops so low that you "can't do," but you don't realize you've passed that point. When you do realize you've passed that point, it takes a long time to correct. You can't get the damn thing turned around for years.

That's what happened to the Army in 1968 through 1975; then the quality of the soldier started back up again. We changed to an all-volunteer force and finally started getting equipment, investing in technology, changing our structure, improving Reserve Component forces and so forth. The result was the quality of forces that won in Just Cause and Desert Storm.

What we're seeing now is Congress asking, "Why do you need all those bonuses?" "Why do you spend so much money recruiting soldiers?" "If the population of the US is 25 percent Category Four, why can't the Army be representative of the population?" The answer is: overall, the combat readiness of the force rises (or falls) proportionately with soldier quality.

From 1969 to 1971, we had units with almost 50 percent Category Four soldiers—50 percent. If a soldier's a Cat Four and not a high school graduate, he's one and one-half times more likely to drop out of the Army. That means you have to recruit and train more people. When you start getting lower quality soldiers, they have trouble with the sophisticated high-tech systems, so you have to limit the MOSs [military occupational specialties] they qualify for or give them more training. They're more likely to end up in trouble or in the stockade, so you need more MPs and more of the company commanders' time. Many more of them have teeth problems, so you need more dentists...etc., etc. It's never-ending.

At the 1993 Field Artillery Conference at Fort Sill, Dutch Shoffner [Lieutenant General Wilson A. Shoffner, Deputy Commanding General of the Training and Doctrine Command] said we had about 12,000 soldiers in stockades and prisons in 1969 with another 12,000 soldiers guarding them—the equivalent of two divisions. Now look at how many soldiers we have in stockades—very, very few. That's because we have motivated, quality soldiers; training programs that focus on combat readiness; and the top-notch leadership to support them.

Recently, the Army recruited an all-time high of 100 percent high school graduates, but that percent is already down to 89 percent. Now, clearly that's a long way from a poor quality force. But the question remains: How do you know when it has gone too far? We better know far enough in advance to be able to do what we said we "can do"—for the sake of the soldiers and our nation.

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

A Number One: Always remember you support the maneuver forces. Number Two: Be professional and proud of your service. Number Three: Train, train, train.



General (Retired) Walter T. Kerwin, Jr., was sworn in as Vice Chief of Staff of the Army in October of 1974 where he remained until he retired from the Army in June of 1978. Currently, he's a Consultant for Martin Marietta Corporation, Bethesda, Maryland. He's also President of the US Field Artillery Association, Member of the Advisory Board of the Association of the US Army, Chairman of the Board of the Army-Air Force Mutual Aid Association and a Member of the Board of Directors of Army Emergency Relief. He served with the 3d Infantry Division during World War II from 1939 through 1944 in several positions, including as Division Artillery S3, in Africa, Sicily, Italy and France. He served as Associate Director of Los Alamos National Laboratory in New Mexico in the early 1950s. General Kerwin commanded the 56th Artillery Group of the XVIII Airborne Corps, Fort Bragg, North Carolina; 3d Armored Division Artillery, and then, later, the 3d Armored Division, Germany; II Field Force in Vietnam; and the Continental Army Command and then, upon activation, Forces Command at Fort McPherson, Georgia.



General of the Army Makhmut A. Gareev, Former Deputy Chief, General Staff of the Soviet Union

Fighting with Fires— *The Russian Way*

Interview by Patricia Slayden Hollis, Managing Editor

Field Artillery had the unique opportunity to interview General Gareev at Fort Sill, Oklahoma, in March. Currently, he holds doctors degrees in military science and history and is a member of the Academy of Natural Sciences of the Russian Federation in Moscow; he and other senior military leaders are members of the academy and serve as a military "think tank." Before coming to the academy, he held a position on the Soviet General Staff equivalent to our Vice Chief of Staff of the Army.

General Gareev was visiting Fort Sill with two other Russian officers for academic military discussions with the Field Artillery School and, among other activities, attended a Paladin live-fire demonstration—even fired one—and viewed static equipment displays.

Q *What is the major military threat to Russia today?*

A Every state has threats. Even neutral countries such as Sweden, Switzerland and Finland have armed forces and face threats. When you talk about the military or the defense of Russia, there might be some doubts; you might say, "Who would think to attack Russia?" To answer that question, I pose another question: When you leave your house and lock your door in the morning, do you know the name of the thief who could come and steal your belongings? Who, exactly, are you protecting yourself against? Every state needs a reliable defense.

Earlier, the greatest threat to Russia was the threat of nuclear war. Of course, now that threat has been set aside. But we certainly can't exclude the possibility of some aggressive action against Russia in the future. The United States is in an advantageous position relative to Russia today, but even the United States must be prepared for military actions in the future.

The farsighted approach would be not to exclude the chance of some aggressive action against Russia in the future. We consider the basis of our military forces is to prevent or respond to such an attack. If you want to be more specific, more likely threats are the local military activities going on even today.

We can't ignore the fact that there are a number of countries who still have nuclear weapons. Nobody would say the nuclear weapons of China or England or France are directed at, say, Luxembourg. Even though our relationship with the United States and Western European countries are friendly, we can't forget the fact that they have forces stationed in Europe on the routes of advance into Russia.

America looks at Russia now as a partner. We also look at America as a partner—perhaps, a future ally. We're working toward that. But the United States gets very concerned about our brigade in Cuba. It's on your doorstep, and you certainly pay attention to that fact. So, why shouldn't we, by the same token, be concerned about US forces stationed in Europe?

Q *With the downsizing of the Russian Army by about 50 percent and the end of the Cold War, the Russian Army has moved to a more defense-oriented posture. How is the composition of the Russian Army changing?*

A The Supreme Soviet in 1985 passed a law about the composition of the armed forces, and as you have already said, our army is downsizing, just as your army is. So there's a decree that says the size of the military cannot exceed one percent of the population, which is roughly, a million and a half soldiers. And if you look at the size of the forces in the 1970s, it's actually down to about one-third of what it formerly was.

The mission, the objectives and the structure of the armed forces are all changing. The situation of the army is changing. Formerly, a significant part of the Soviet armed forces were stationed abroad in Germany, in the Baltic states; now, they're all being drawn back, concentrated inside Russia.

We have the idea that the central structure of the military is going to be reduced. We've gone from 21 military districts and groups of forces down to eight, and we're considering further reductions in the future.

The strategic forces will continue as they are. But the mobile forces, the main part of which are airborne forces, are going to change significantly—to a corps and brigade-based structure.

The heavy forces already have been reduced and consolidated along the strategic



PVT Scott Evers

While visiting Fort Sill, GEN Gareev (Center Left), standing next to MG Vladimir Slipchenko, also Russian, receives a briefing from US artillerymen.

axes of Russia. It only makes sense. Strategically, they are less mobile. The point is, instead of being positioned in Germany or someplace outside Russia from which they could move, they're in Russia proper.

In relative terms, our airborne forces are very mobile. You can put them in airplanes and send them anywhere. The heavy forces in Russia can only move a short distance in a short time.

Q Many in the US Army consider you instrumental in the development of the operational maneuver group [OMG]. What part did you play in developing the OMG?

A The OMG was just an *evolution* in the development of military science. For example, a long time ago, infantry had the task of advancing, but at the same time, the cavalry had the task of exploiting their success. In World War II,

it was the task of the tanks to do the same sort of mission. In other words, the combined arms groups were to fight the battle, create the hole in the enemy's defenses, and the tanks had to take advantage of that hole to drive deep into the enemy's defenses. During that war, they called it a mobile force.

So, why at the end of the 1970s did we decide to name this an OMG? Because, at that time in the evolution of its development, the group consisted of different types of forces than those used in World War II. Besides tanks and motorized rifles forces, it also consisted of aviation, helicopters and air defense forces.

Another difference is in the way the OMG was supposed to operate in comparison to the maneuver group. It was supposed to operate with airborne troops at different distances deep in the rear. The entire materiel base of the old maneuver group changed. It started using self-propelled artillery. All its equipment was

more mobile—highly mobile. Its tanks and BMPs [tracked infantry combat vehicles] were able to swim—to cross rivers. So all this new equipment gave us a new outlook on the old maneuver groups. Based on these changes, we created a new term, OMG.

Now this concept of an OMG doesn't exist only in our army, it also exists in the American Army. In your army, it would be employed as a concept under AirLand Battle.

But you must understand that an OMG doesn't exist in the Russian Army today—it's a "buffalo." All the corps, all the groups designated specifically to be OMGs no longer have that mission. But that doesn't mean the capability isn't there. For example, if there happened to be another large-scale war, an "OMG" would have the same task as before. The combined arms and infantry would have the task of making the holes in the defense, and then some group from the second echelon or the reserves would be formed to exploit them.

During the Cold War, we had no OMGs in East Germany. We had certain structures or certain groups of forces, corps and divisions, that were designated to act as OMGs, but none of them were actually on the territory of Germany. There was one in Belorussia and one in the Transbaikal Military District deep in the rear.

Your 3d Armored Division, 2d Armored Division (Forward), 1st Armored Division—all those divisions you had in Germany—had the same mission as the OMG. They were to exploit weaknesses and disrupt everything in the rear, whether it be air defenses, lines of communication or whatever. If you look at the structure of any army—Russian, American, French—there's some unit that's supposed to make the hole in the defense. Then there's some mobile force, for example, a tank division or whatever, whose main mission is to very quickly shoot through the lines and disrupt the rear area. So, it's built in the structure of every modern army.

Q Your overall military philosophy is to use maneuver to exploit the effects of fires. Do you think a ground force commander can achieve operational objectives with just fires?

A We're convinced that both Russian and American artillerymen have basically the same views on this matter—that

“ ...independent air operations at the operational level are not likely to be as effective as integrated operations in most situations.”



long-term success is based on the destruction of enemy forces through fires. In the First and Second World Wars, because of the lesser capabilities of our fire systems, we couldn't suppress the enemy with our artillery or other fire systems alone. The biggest part of the task fell on the infantry and tanks—the actual fighting troops. Now, with the appearance of helicopters and airplanes and their role in this system of fires, we can more successfully suppress the enemy or destroy the enemy. Thus, the ground forces, the infantry, can act now with much lower losses of life.

And another point is that during World War II, for example, we couldn't take advantage of preparatory fires because we didn't have a force mobile enough to take full advantage of the effects these fires had on the enemy. Now, with a more mobile force, we can better take advantage of the effects of preparatory fires to attain our goals.

But fires alone, without maneuver, will never be able to achieve operational objectives. It's impossible. You may be able to convince yourself they can on the basis of what happened in Iraq, a most unique situation. But until a soldier stands on the ground at the objective, nothing is decided.

Using fires alone, you can't completely destroy the enemy. He's always going to call up his reserves, or rebuild his infrastructure, reconstitute. That's why you dropped airborne troops into bases in Iraq behind the defenses and then met up with them with motorized and mechanized forces. You could do that because maneuverability has increased so much—maneuver capabilities.

Q *Do you think independent air operations at the operational level are a viable means of conducting air-land operations or do the two need to be integrated to be most effective?*

A Viable, yes, but independent air operations at the operational level are not likely to be as effective as integrated operations in most situations. It depends on the situation. For example, in the Persian Gulf, you were able to conduct an air campaign and then follow up with a ground campaign. When conditions permit, an air campaign, such as the one you had in the Persian Gulf, is the way to go until the enemy's defenses are drawn down to the



GEN Gareev and MG Slipchenko view a Paladin live-fire shoot at Fort Sill.

point where friendly land forces meet minimum resistance.

But conditions won't always permit you to do that. Iraq might suddenly have attacked. The outcome could have been entirely different. You might not even have been able to have conducted an air campaign.

There's a big change in the role air forces play in conflicts—it has increased considerably. In the past, for example, the preparation by air forces might have lasted two or three days, but now the preparation has increased considerably—not only the length of time, but also the number of missions.

In concert with the air campaign, you need to conduct an electronic warfare [EW] campaign. In such an operation, even space systems are going to play a role. When I say space systems, I'm not talking about just intelligence or communications systems; there's the possibility

that weapons systems will be developed that can be launched from space. So, in the future, you're not going to conduct simply an air campaign, it's going to be an integrated campaign.

Future wars are not going to change completely, but the parameters of those wars will be different. The role of fires—artillery, rockets or whatever—will increase considerably in the future. For example, in the past, the role of fires was primarily limited to the tactical sphere; in the future, fires are going to have an effect throughout the depths of both sides of the conflict.

Q *What do you see as the impact of precision, or smart, munitions on modern warfare?*

A During World War II, in a five- to six-kilometer zone we could destroy about 20 to 25 percent of the targets

“...in the past, the role of fires was primarily limited to the tactical sphere; in the future, fires are going to have an effect throughout the depths of both sides of the conflict.”



“With smart munitions, the artillery is going to come to the point that every shot will hit its target—one shot, one kill.”

with Field Artillery—in rare instances 30 percent. The rest of the targets had to be destroyed by the infantry or tanks. That's what made offensive operations so difficult. During Operation Desert Storm, you used precision munitions to help reach the goal of destroying 50 percent of the targets before the ground campaign started. That's a more accurate percent to ensure success.

With smart munitions, the artillery is going to come to the point that every shot will hit its target—one shot, one kill. But, at the same time, the enemy is going to be able to employ some sort of electronic warfare to counter those shots. Therefore, you need to allow enough conventional munitions to destroy 30 percent of your targets, munitions that can't be countered by EW. They are less reliable and less accurate, but you know you can get them, at least, close to the target.

Let me give you an example of how technology evolves to counter smart munitions. In 1971 in the Suez Canal zone, the Israelis fired 70 Shrike missiles from Phantom jets at Egyptian air defense artillery [ADA] sites, but only one missile hit its target. There were 140 Egyptian ADA sites in a 100-kilometer area. The reason those missiles didn't hit their targets was because of decoys. The missiles homed in on the dummy ADA targets—some went to the third decoy before exploding. Now it's true, munitions are more sophisticated now than they were in 1971 and the massive use of smart munitions will be quite different. But EW measures also are advancing to counter them. These sophisticated munitions will be easier to counter with EW.

Q *Earlier today, you had an interesting discussion with Field Artillery School personnel about targeting and the role intelligence and Field Artillery play in that process. Would you share some of those comments with our readers?*

A Targeting is complex, and you need to employ a number of systems to be effective. Our division can see 30 to 40 kilometers, our army [corps] can see 80 to

100 kilometers and our front [echelons above corps], 250 kilometers. But the battlefield is complex—targets already detected move, new ones appear and you detect some you didn't see before.

At the division level, you need to assign targets to systems—aviation, electronic warfare, air force, Field Artillery—and giving that responsibility to the artillery is putting it in the right place. The disadvantage is that the artillery commander doesn't command intelligence, aviation, etc. So you make the artilleryman the assistant division commander for fires to control all those assets. A few years ago, we moved the control of fires to the headquarters of the combined arms group—the headquarters of the commander in charge of it all. His staff must do the targeting. It takes the hand of the King of Battle to ensure fires are in order.

Good intelligence is very important to the targeting process. In World War II, 1941 and 1942, we had no system of intelligence to target. And once we had one, we were much more effective. If you have good intelligence and can fire accurately on the target—keep the enemy's head down—you can win anywhere.

So how do you look for targets? You look at not only the map of the enemy forces, but also the map of friendly forces and carefully compare the two. From that analysis, you can determine how many fire missions you'll need. The details are most important—take care of the details and they'll take care of you.

But good intelligence goes beyond determining fire missions. If the battalion or brigade is in the attack and it doesn't

know what's in front of it, the intelligence preparation of the battlefield [IPB] wasn't done right. And it's not the battalion or brigade commander's fault—it's the fault of commanders several levels up.

Field Artillery contributes significantly to fires. During a preparation in World War II, artillerymen were responsible for fires, and 95 percent of the fires were Field Artillery fires. Now during a prep, 50 percent are Field Artillery fires and the other 50 percent are aviation or air force fires. And when you move from the prep to actual combat, the Field Artillery provides 80 percent of the fires because air force and aviation assets are frequently not in the vicinity where fires are needed when they are needed.

Q *You also discussed the advantages and disadvantages of armored self-propelled artillery with Field Artillery School personnel. Would you comment on those?*

A Self-propelled artillery has one major advantage—armor. In 1971 from a vantage point overlooking the Suez Canal zone, I watched the Israelis deploy a self-propelled battery and start to fire. It took eight Egyptian batteries firing on it to silence the Israeli battery—and then really only one gun was damaged. We had always thought it would take two to three batteries to counter one battery. That was quite a surprise to us—I can tell you that now. The number of rounds it now takes to destroy a self-propelled artillery piece are going to increase.

But there are disadvantages to armored self-propelled artillery. Moving decreases the accuracy of self-propelled artillery. It takes so many artillery rounds to follow for resupply and uses so much gas. It can't survive in a chemical environment more than 30 to 40 minutes. In the film they showed me today, your artillery was out

“...we moved the control of fires to the headquarters of the combined arms group—the headquarters of the commander in charge of it all....It takes the hand of the King of Battle to ensure [that commander's] fires are in order.”



in the open. Self-propelled artillery can't survive in the wide open—its armor doesn't make it invincible.

There are measures you can take to ensure the survivability of the weapon. You can establish a hardened hide position with a separate firing platform; the weapon comes out of the hide position to fire on the platform and then goes back into the hardened site. While on the move, you have to make the most of available hide positions—use the terrain.

At higher levels, artillery doesn't need to be self-propelled. You can use field guns that have longer ranges and are harder to target.

Q *What did you learn that surprised you about operations in Desert Storm?*

A No one expected the Iraqi Army to be so passive in its defense. From the perspective of military art, no one had ever seen anything like that. We noted your use of all the different systems, including the high-precision weapons, and how poorly the Iraqi Army used its air defense systems. Most of what surprised us was based on the fact that Iraq didn't conduct much of a defense.

There were many political actions that also affected the Iraqi military. For example, Hussein held his troops in Kuwait in a defense instead of attacking early on. When he should have moved them, he didn't. As a matter of fact, at the very moment the coalition forces began to attack, he started pulling those troops out, making them defenseless, being in the open as they were.

Your troops did very well in the Persian Gulf. But remember, it was a one-sided war, and if Iraq had fought back, the war would have been much different. Some say the United States Army should give Saddam Hussein a medal for helping to demonstrate its capabilities—the power of your army.

Q *What are your observations about your war in Afghanistan?*

A It was a big war, and I can't tell you about it in a short time, so I'll just hit the high points. From a political viewpoint, it was just an adventure. It wasn't really thought out too well.

From the military perspective, there were two problems. To understand the first

“ When it gets down to it, the Artillery and Infantry are the only two branches in the army that can't refuse to accept a mission. ”



L to R: GEN Gareev, BG Dan Benton, Assistant Commandant of the FA School, and CPT Edward Shevelev, Russian Navy.

that's a subject that would take an entire interview to discuss. Let's just say, overall, it was a very difficult war.

Q *What message would you like to send US Field Artillerymen stationed worldwide?*

A The great role of Field Artillery remains today as the God of War—the King of Battle. Artillery is reliable 24 hours a day in any weather. Aviation is weather-dependent and too independent. By too independent, I mean aviation may have other, possibly conflicting, missions or priorities.

When it gets down to it, the Artillery and Infantry are the only two branches in the army that can't refuse to accept a mission.



problem, you must understand what *didn't* happen in Afghanistan. We didn't send troops there to fight. We never had the mission of conducting operations or fighting. And, of course, they didn't suffer defeat.

The mission our troops had was to set up garrisons in different places here and there. The people of Afghanistan celebrated the coming of our troops like a holiday with flowers. But the policies never considered that Soviet forces, once sent in, would have to fight. That was a mistake.

The second problem was related to the Afghan government. Their troops did complete all the missions they were actually given—maintained all their positions and held all the main cities. Even three years after the Soviet troops left Afghanistan, they had an advantage. The government of Afghanistan didn't fall until *after* it stopped supporting the Soviet government.

The same thing happened, you could say, with Tadzhikistan, Uzbekistan and all those. As soon as the Soviet government stopped giving them materiel support, they turned away from the Soviet government.

Also, our troops were not that well prepared—unable to deal with the unique conditions they faced in Afghanistan. But

General Makhmut A. Gareev holds doctors degrees in military science and history and is a member of the Academy of Natural Sciences of the Russian Federation in Moscow. Before coming to the academy, he served as Deputy Chief of the Soviet General Staff. Other assignments on the General Staff included Chief of a Main Directorate and Chief of the Military Science Directorate. Conscripted in 1941, he was an Armor officer in World War II, assigned to the Fifth Guards Tank Army (Third Belorussian Front in 1944 and First Baltic Front in 1945), taking part in the East Prussian Operation (March to May 1945). In June 1945, he transferred to the Sixth Guards Tank Army where he participated in the Manchurian Operation, August and September 1945. From 1945 to 1946, he was part of the Soviet Military Advisor Group to the Chinese People's Liberation Army. As a colonel, he commanded a guards tank division in the Belorussian Military District from 1956 to 1969. As a major general, he became Chief of Staff of the Urals Military District in 1972 until he joined the General Staff in 1974. General Gareev is a graduate of the Voroshilov General Staff Academy, Frunze Military Academy and Soviet Cavalry School. He's the author of several books and many articles.

1994 History Writing Contest

The United States Field Artillery Association is sponsoring its ninth annual History Writing Contest with the winners' articles to be published in the August 1994 edition of *Field Artillery*. To compete, submit an original, unpublished manuscript on any historical perspective of Field Artillery by 7 February.

The Association will award \$300 for the First Place article, \$150 for Second Place and \$50 for Third. Selected Honorable Mention articles also may appear in *Field Artillery*.

Civilians of any nationality or military of all branches and services, including Allies, are eligible to compete. You don't have to be a member of the Association. Your submission should include your (1) double-spaced, typed manuscript of no more than 3,000 words; (2) biography and; (3) graphics (black and white or color photographs, slides, charts, graphs, etc.) to support your article. Be sure to include footnotes in and a bibliography with your manuscript.

The article should include specific lessons or concepts that apply to today's innovative Redlegs—it should not just record history or document the details of an operation. Authors may draw from any historical period they choose.

A panel of three expert historians will judge the manuscripts, which will be sent to them without the authors' names. The panel will determine the winners based on the following criteria:

- Writing clarity (40%).
- Usefulness to Today's Redlegs (30%).
- Historical Accuracy (20%).
- Originality (10%).

By 7 February 1994, send the manuscript to the United States Field Artillery Association, ATTN: History Contest, P.O. Box 33027, Fort Sill, Oklahoma 73503-0027. For more information, call the Editor or Managing Editor of *Field Artillery* at DCTN 639-5121/6806 or commercial (405) 351-5121/6806.



1993 History Contest Winners

First Place: "The Viet-Minh at Dienbienphu: Artillery in a Mountainous Environment" by Captain Kevin J. Dougherty, Infantry

Second Place: "Parker's Crossroads: The Alamo Defense" by Sergeant First Class (Retired) Richard Raymond III

Third Place: "Redleg Heroism at Suoi Tre" by Major Ralph R. Steinke



Judges of the 1993 History Contest

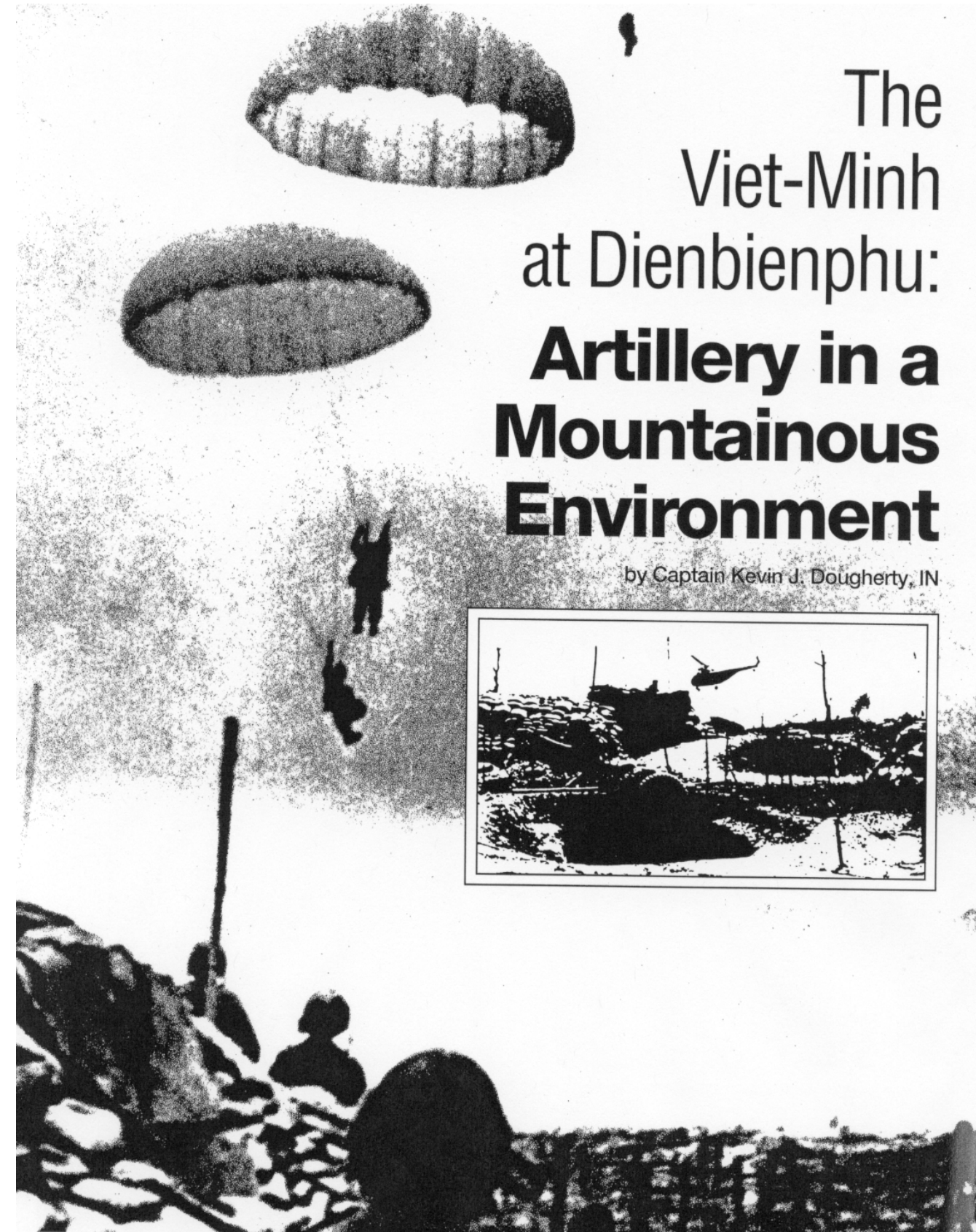
Major General (Retired) Gerald P. Stadler holds a Master of Arts in History from Duke University and taught a variety of subjects, including History, at the National War College, Washington, DC. He also taught History at the US Military Academy at West Point. Among his assignments, he commanded four batteries, one in Vietnam; the 2d Battalion, 27th Field Artillery, 3d Armored Division in US Army Europe; the 1st Cavalry Division Artillery, Fort Hood, Texas; and III Corps Artillery, Fort Sill, Oklahoma. General Stadler currently is Vice President for Investments for Citizens Bank, Lawton, Oklahoma.

Dr. L. Martin Kaplan earned a Ph.D. in American History with a minor in Soviet History, National Security Policy, from Kansas State University; a Master of Arts in American Military History from Ohio State University; and a Bachelor of Arts in History from Ohio Wesleyan University. He has served as the Assistant Command Historian at the US Army Field Artillery Center and Fort Sill, Oklahoma, for the past three years. Among his other publications, Dr. Kaplan has a monograph, "Harnessing Indirect Fire: A Study of Field Artillery Training Readiness and Signal Communications 1905-1941," awaiting publication as part of the US Army Training and Doctrine Command Military History Program.

Major James J. Carafano holds a Master of Arts in History from Georgetown University and taught History at the US Military Academy at West Point. Among his other assignments, he has served as a battery commander in III Corps Artillery, Fort Sill and battalion S3 in the 3d Infantry Division (Mechanized), Germany. He's a graduate of the Command and General Staff College, Fort Leavenworth, Kansas, and currently is serving as the History Instructor for the Field Artillery Officer Basic and Advanced Courses, US Army Field Artillery School, Fort Sill. Major Carafano has published several historical articles in *Field Artillery* and other magazines.

Field Artillery Themes for 1994

Month	Theme	Copy Deadline
February	Fire Support—The Maneuver Perspective	4 Oct 93
April	FA Training	6 Dec
June	Leadership	7 Feb 94
August	History	7 Feb (Contest) 4 Apr (Other)
October	Fighting the Close Battle	6 Jun
December	Red Book: Annual Report	1 Aug



The Viet-Minh at Dienbienphu: **Artillery in a Mountainous Environment**

by Captain Kevin J. Dougherty, IN





Mountainous environments offer peculiar challenges for employing Field Artillery. The rugged terrain is a serious obstacle to the mobility of artillery and its ammunition. Suitable firing positions are scarce and, therefore, easily identified by the enemy. In addition, changing meteorological conditions increase the need for observed fire and registration.

The prudent commander will weigh these considerations when using artillery in the mountains. He also may want to study the Viet-Minh at Dienbienphu in Vietnam as a historical example of how to innovatively tailor his artillery tactics to fit the terrain and situation.

In December 1953 and January 1954, Colonel Charles Piroth, an artilleryman and the deputy commander at Dienbienphu, was quick to deny any threat to the French defense there from Viet-Minh artillery. He confidently informed all inquirers:

Firstly, the Viet-Minh won't succeed in getting their artillery through to here. Secondly, if they do get here, we'll smash them. Thirdly, even if they manage to keep on shooting, they will be unable to supply their pieces with enough ammunition to do us any real harm (Bernard Fall, *Hell in a Very Small Place*, J. B. Lippincott Company, Philadelphia, 1967).

General Henri Navarre, the Commander-in-Chief of the French Union Forces, expressed concern that strongpoint Beatrice to the northeast of Dienbienphu (see the map) was surrounded by dense jungle hills that could conceal many Viet-Minh heavy guns. He feared that if Beatrice fell into enemy hands, much of Dienbienphu would be vulnerable to enemy fire. Again, Piroth offered his reassurance, "Mon General, no Viet-Minh cannon will be able to fire three rounds before being destroyed by my artillery" (Fall).

Incoming

By March, however, it had become apparent that Piroth had seriously miscalculated. The French were receiving artillery fire from a variety of places and were unable to deliver effective counterbattery fire. Furthermore, a deciphered enemy logistics code revealed the Viet-Minh had 44,000 37-mm rounds, 5,000 75-mm rounds, 21,000 81-mm rounds, 15,000 105-mm rounds and 3,000 20-mm rounds in the Dienbienphu area. Thus, the French headquarters at Hanoi issued a revised report concluding that:

...total neutralization fire requires about 50 rounds per hour per hectare [2.5 acres] of terrain. The Viet-Minh is capable of delivering approximately 33 rounds per

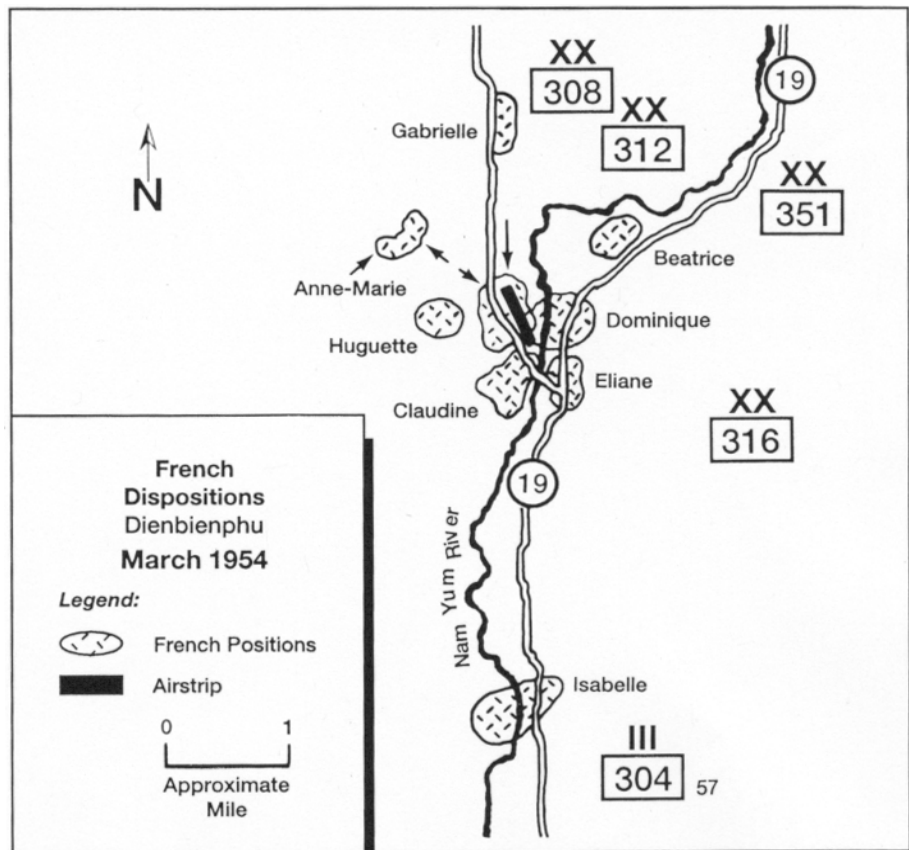
minute for a duration of five hours on the totality of the headquarters positions, the artillery and the mortars, while partially neutralizing Isabelle [the strongpoint to the south] as well....The Viet-Minh artillery is as numerous as ours, and its observation is better (Fall).

When General Vo Nguyen Giap, the Viet-Minh commander, launched his 13 March attack on Dienbienphu, the French paid a heavy price for Piroth's callous underestimation of the Viet-Minh artillery. Phillip Davidson described the fury of the bombardment

in his book *Vietnam at War*:

Giap's artillery fire was heavy and accurate. The east fortification on Beatrice turned to dust under the pounding; the mortar battery on Gabrielle [the strongpoint to the north] was smothered; the French artillery emplacements in the main position were hit, where two guns were knocked out and several crews killed or wounded (Novato, Presidio, 1988).

Sergeant Kubiak, one of Dienbienphu's defenders, remembered that "shells rained down on us without stopping like a hailstorm



Battle of Dienbienphu, December 1953 to January 1954. The French Union Forces faced the Viet-Minh in 55 days of fighting with the Viet-Minh conquering the French. The Viet-Minh artillery was highly effective in the mountainous terrain, making the most of mobility, cover and concealment and observation.

on a fall evening. Bunker after bunker, trench after trench collapsed, burying under them men and weapons "(Fall). Additionally, the artillery struck Dienbienphu's airfield, destroying planes, fuel and munitions. Things would get much worse before they got better.

At 1830, an artillery round hit the French command post at Beatrice, killing Major Paul Pegot, the 3/13 French Foreign Legion half-brigade commander, and his entire staff. A few minutes later, another shell killed Lieutenant Colonel Jules Gaucher, the commander of the northern defensive sector. These two rounds robbed Beatrice of its leadership. The coordination of the defense faltered, and the French companies soon began fighting their own separate battles (Davidson).

On 14 March, the Viet-Minh resumed its artillery bombardment at 1700. The artillery destroyed the remaining aircraft, runway, control tower and beacon. This loss of their airfield forced the French to rely on airdrop resupply for the duration of the siege. To make matters worse, the enemy artillery had destroyed what few vehicles the French had. This necessitated their recovering the widely scattered bundles by hand, a physically exhausting and time-consuming task (Davidson).

The following day brought more of the same. At 0400 on 15 March, a round landed on the battalion command post at Gabrielle. The battalion commander, his replacement and most of the staff were wounded. Additionally, the radios connecting the command post and the companies were destroyed (Davidson). As at Beatrice, artillery had interrupted French command and control at Gabrielle.

Thus, in just three days, Viet-Minh artillery killed or wounded several key French leaders, disrupted the French ability to fight a coordinated battle and isolated Dienbienphu from any air-land resupply or reinforcement. How could artillery accomplish such a devastating effect in a mountainous environment, an environment so rugged that Piroth, an artillery man, had denied the possibility? Much of the answer can be found in Giap's efforts to maximize the mobility, cover and concealment and observation of his artillery.

Mobility. *FM 90-6 Mountain*

Operations states, "Field Artillery must be as mobile as the force it supports" and "planners must make sure that increased consumption is included in the computation of the required supply rate (RSR) for ammunition." In this regard, Giap's use of artillery at Dienbienphu is exemplary.

No one really knows how much artillery the Viet-Minh had around Dienbienphu. Giap never revealed the numbers or calibers. However, estimates by various French and American authorities led to the conclusion that the Viet-Minh had 20 to 24 105-mm



The 500-mile route to supply the Viet-Minh at Dienbienphu started at Mu Nam Quan on the Chinese border.

howitzers, 15 to 20 75-mm howitzers, 20 120-mm mortars and at least 40 82-mm mortars (Davidson).

The real surprise to the French was not that the Viet-Minh had that much artillery; they had known about that for a year. What the French completely discounted was the mobility of the Viet-Minh artillery. This meant not just transporting the heavy pieces across road-less mountains to Dienbienphu, but also keeping them supplied with sufficient ammunition to have an effect. The task is even more impressive when one considers the mainstay of the supply system were columns of porters pushing bicycles modified to carry heavy loads (Fall).

The Viet-Minh lines of communication began at Mu Nam Quan on the Chinese border over Provincial Road 13-B to the Red River and from there via Provincial Road 41 to Dienbienphu. Taking into account all the detours, deep fords, blown bridges and alternate bypasses, the journey was more than 500 miles. Nearly 20,000 coolies and tribesmen slaved for three months to rebuild and widen Road 41 so it

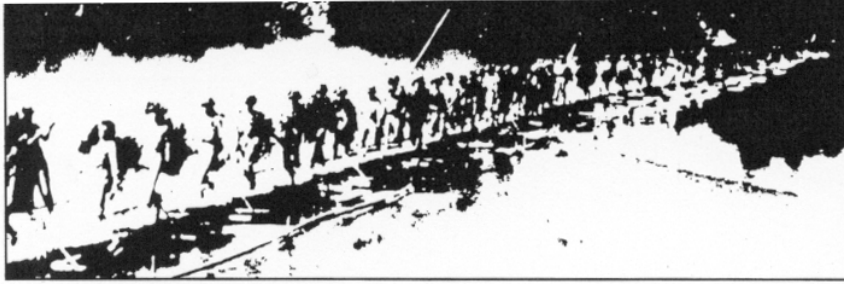
would accommodate the artillery pieces and the 800 Russian-built Molotova 2 1/2 ton trucks that were the backbone of the conventional supply system. To this civilian support were added the efforts of the 151st Engineer Regiment and 88th Regiment of the 308th Division.

The most difficult challenge was the last 50 miles of the route from the main supply dumps at Tuan Giaoto to the valley. Here the road simply ceased to exist and had to be built from scratch. This also was where the road was closest to the French airfields and subject to frequent aerial surveillance and bombardment (Fall). After the battle, Giap wrote of the effort:

Our troops opened the road and hauled the artillery pieces into our lines...during seven days and seven nights...our troops razed hills, cut roads into mountainsides and opened the road to the artillery in the prescribed time. The secret was well-kept, thanks to excellent camouflage, and the roads were kept open until the end of the battle....Night and day, the enemy bombed those very difficult roads, and nonetheless, our transports got through on the whole (Fall).

The success of the Viet-Minh mobility and supply effort is told by the numbers. Early French estimates expected the Viet-Minh to be capable of bringing in only enough ammunition to support a five- to six-day attack (Davidson). Instead, French artillery specialists at Dienbienphu estimated that throughout the 55-day battle, the fortress was hit by approximately 30,000 shells of 105-mm and probably more than 100,000 shells of other calibers. This amounts to 1,300 to 1,700 tons of munitions delivered to the valley between December 1953 and May 1954 (Fall). Bernard Fall, perhaps the most learned scholar of the battle, goes so far as to say, "essentially, then, the battle of Dienbienphu was won along the communications lines."

Cover and Concealment. FM 90-6 notes that "the relative scarcity of good firing positions increases the probability of receiving enemy fires when occupying a desirable position." Recognizing this, Piroth boasted, "If I get 30 minutes of advance warning, my counterbattery fire will be effective" (Fall). Giap also realized this and addressed it with extraordinary



Although the Viet Minh relied on guerrilla operations, General Giap also fielded well-armed regular divisions, each with an organic engineer battalion capable of supporting movement with pontoon bridges.

cover and concealment for his artillery.

Dienbienphu was surrounded by densely vegetated mountains that provided excellent camouflage and protection for Giap's artillery. Giap took advantage of this situation by digging in his pieces so they could either be fired from portholes or pulled out of their positions to fire and then pulled back in as soon as the counterbattery fire began. Weapons were moved into positions under the concealment of darkness, and the camouflage was so thorough that even the paths of the ammunition handlers were hidden (Colonel Charles Biggio, Jr., "Let's Learn from the French," *Military Review*, October 1966).

To complete the effect, Giap established a few dummy positions he knew the French could see. With Viet-Minh soldiers setting off explosives to simulate firing, the French were tricked into firing 1,650 rounds of 105-mm on one set of dummy emplacements (Jules Roy, *The Battle of Dienbienphu*, Carroll and Graff, New York, 1963). The result of these Viet-Minh efforts were positions dug so "deep and well camouflaged [they] were well-nigh impervious to both napalm and HE [high-explosive rounds]" (Captain M. Harrison, "Dien Bien Phu," *Canadian Army Journal*, October 1954).

Navarre acknowledged the perfection of the Viet-Minh cover and concealment and observed, "We knew that a large number of artillery and AA gun emplacements had been prepared, but their camouflage had been so perfect that only a small number of them had been located prior to beginning the attacks" (Davidson).

Even Bearcat pilots flying risky, low-level photograph missions were unable to see anything (Roy): Recalling the confident predictions of Piroth, Navarre lamented that the efficiency of the Viet-Minh artillery positioning "was to make a

shambles of all the estimates of our own artillerymen. It was the major surprise of the battle" (Davidson).

Observation. Another FM 90-6 conclusion is that terrain restrictions in the mountains generally will necessitate using high-angle indirect fire. Weather also will play a key role, and rapidly changing meteorological conditions will decrease the accuracy of predicted fires. Thus, FM 90-6 notes that observed fire "should be the norm" and registration "is essential" in mountainous environments.

Giap recognized the importance of observed fires and registration, but he had overriding considerations that steered him away from high-angle indirect fires. Giap knew his artillerymen lacked experience, training and a reliable communications network. If he placed his guns behind the hills surrounding Dienbienphu and used them for indirect fire, he could not range the French. On the other hand, if he put them on the forward slopes, he would be exposed to counterbattery fire and air attack (Davidson). Citing this dilemma, the French felt the role of Viet-Minh artillery would have been minimal.

FM 90-6 states, "Field Artillery observation posts (OPs) should generally be placed on the highest available ground." It also recognizes that "some weapons may be moved forward to provide...direct fires." Giap's employment of his artillery demonstrates these considerations. By occupying the high ground 3,000 to 4,000 meters from the airstrip and 1,500 to 2,000 meters from the French entrenchments, Giap's artillery had excellent observation (Davidson). By firing in the direct-fire mode, Giap minimized the effects of his gunners' lack of experience and austere communications.

As America began its involvement in Vietnam, Colonel Biggio in his article "Let's Learn from the French" cited tactical lessons for America to learn from the

French experience in Indochina. One lesson was "the French underestimated the capability of the enemy to innovate and to tailor his tactics to fit the situation." As an example, Biggio offered Giap's unusual, but highly effective, employment of his artillery on the forward slope in a direct-fire role.

The excellent observation allowed the Viet-Minh to register its artillery on the French airfield and revetments where the maintenance crews worked (Fall). The effects of this observation and accuracy are illustrated by a single Viet-Minh 75-mm mountain howitzer that had been zeroed in on the airfield since February 1. This one piece damaged or destroyed almost a dozen French aircraft without being detected (Fall).

Innovating

Dienbienphu was the decisive battle between the French and Viet-Minh in Indochina. A large measure of the Viet-Minh success was due to Giap's careful employment of his artillery in a mountainous environment. Most of Giap's techniques—his emphasis on mobility, cover and concealment and observation—are consistent with the considerations expressed in FM 90-6. However, his unconventional use of the forward slope and artillery in the direct-fire role demonstrate there's always room for innovation.

Today's artillerymen can use Dienbienphu as an example of how a firm grounding in the fundamental principles supplemented by a realistic appraisal of one's capabilities and limitations can result in successfully employing artillery in the mountains.



Captain Kevin J. Dougherty, Infantry, won First Place in the US Field Artillery Association's 1993 History Writing Contest with this article. He's a Small Group Instructor for the Infantry Officer Advanced Course at the Infantry School, Fort Benning, Georgia. His previous assignment was as a Rifle Platoon and Scout Platoon Observer/Controller at the Joint Readiness Training Center, Fort Chaffee, Arkansas. He commanded B Company, 5th Battalion, 502d Infantry in the Berlin Brigade, Germany. Captain Dougherty is a 1983 graduate of the US Military Academy at West Point. He has had articles published previously in *Infantry*, *Army Trainer* and *Army RD&A Bulletin*.



Parker's Crossroads: *The Alamo Defense*

by Sergeant First Class (Retired) Richard Raymond III

The tactical situation may require a rigid defense of a fixed position. Such a defense, if voluntarily adopted, requires the highest degree of tactical skill and leadership.

U S Army Field Service Regulations, 1939

In the forested hills of eastern Belgium stands the tiny hamlet of Baraque de Fraiture at the intersection of two good highways. To see this little clutch of buildings, one would hardly think that the red tide of war had ever washed over them. Yet this now-peaceful crossroads was the scene of fierce combat, one of the most heroic that ever graced the annals of American arms.

For in the winter of 1944, a skeleton headquarters and a bobtailed, three-gun battery of light howitzers, the forlorn remnant of a once-potent 589th Field Artillery Battalion, chugged wearily up to the junction under the command of Major Arthur C. Parker III. The battalion's mission was to organize and defend the crossroads when a great wave of Nazi armor and infantry had cracked the Allied front, reaching northwestward toward the crossings of the Meuse River and the vital

port of Antwerp. A dangerous split between the British and American armies was a real possibility.

For three 105-mm howitzers to hold the outpost line is not a conventional assignment for a divisional battery and deserves explanation. They represented all that was left of a 12-gun battalion in direct support to the 422d Infantry, a regiment of the 106th "Golden Lions" Infantry Division. Their misfortune was to have been at the point of a great enemy offensive less than one week after arriving from training camps in England.

The Golden Lions had moved directly into foxholes and trenches vacated by the veteran 2d Infantry Division, "man-for-man and gun-for-gun," as the orders put it. The relief went smoothly enough, but the division commander, Major General Alan W. Jones, was concerned about the exposed positions of his



regiments and the extreme length of the line they were to occupy—nearly 22 miles.

Higher headquarters had called it a "Ghost Front" with little or no enemy activity, but Jones and his staff at once set about making the lines more secure. He had hoped to have a period of gradual workouts against the formidable "West Wall" before serious operations began in the spring. But on 16 December, Hitler's tanks rolled, and the Battle of the Bulge was on.

In a three-day nightmare, Jones' green division was swamped and broken by powerful armor and infantry thrusts, and two of his three line regiments were surrounded and forced to surrender. The remainder felt lucky to be able to pull back to more defensible lines around St. Vith.

During the withdrawal, the 589th Field Artillery was ambushed and cut off, and most of the battalion, including its commander, was captured. Only a handful from Headquarters Battery and the first three howitzers of A Battery escaped. These were the guns that Major Parker—formerly battalion S3 but then acting commander—led into position around Baraque de Fraiture. But he meant to make a fight of it—Parker had elected to conduct an "Alamo Defense."

Alamo Defense

The Alamo Defense deserves serious study as an option for the commander of a force facing a greatly superior enemy, given a vital defensive mission and meager resources to sustain it. Though the historical precedent is obvious, this tactic is defined here as the *rigid defense* of a key position carried out to the utter destruction of the command with the objective of forcing the enemy to expend significant amounts of men, materiel and especially time, thereby enabling other friendly forces to regroup and fight elsewhere to better advantage. It's an act of gritty self-sacrifice.

This defense requires the utmost in leadership and tactical skill. It also demands rare moral courage and dazzling salesmanship to persuade other units and individuals to stay and join an underdog team—qualities Major Parker had in abundance.

The classic example of the Alamo Defense is the heroic stand in 480 BC of Leonidas and his 300 Spartans against the Persian hosts. (In truth, the fight at the Alamo might, with perfect justice, be called "Thermopylae Defense," but here it seems more appropriate to relate to American military tradition.)

Francis Aspirwall (Ex-SSG HHB 589 FA)



Parker's Crossroads looking north towards Liege, July 1945. Note the ruins of an inn on the right.

There are four critical elements in the Alamo Defense. First, the chosen terrain is one on which the enemy can't readily bypass or push through the defending force. Second, this type of defense is assumed voluntarily when less drastic courses of action are available. Next, combat is maintained to the bitter end—no breakout or fighting withdrawal (except, perhaps, for a few who escape during the final collapse). Last, the correctness of the decision to make the Alamo Defense is

confirmed by the outcome: other friendly forces used the time well and fought on to victory. For only the mystic, sublime faith in the rightness of their cause and the hope that their deaths will not go unavenged can infuse most rational soldiers with the spirit to carry such a black business to its conclusion.

At Thermopylae, the Spartans held a narrow cliff-side road and were immovable by the huge masses of Persians. Only when a Greek traitor informed King Darius

of the existence of a goat-path around the little army did a flanking column succeed in getting behind them. Perfectly sure of their fate, Leonidas and his men permitted their allies to withdraw and then fought to the last man.

In contrast to the rough terrain at Thermopylae, the Texans' little fortress at the Alamo represented a *psychological* roadblock. Santa Anna, who boasted of being the "Napoleon of the West," could not, for his very pride's sake, simply march around San Antonio and press on toward his true objective, Sam Houston's ragged army.

Houston, coolly logical, had ordered Colonel William Travis to abandon the Alamo and blow up the magazine. The post was militarily indefensible, and to allow a whole battalion of splendid fighters to be trapped and destroyed was folly. Travis ignored the order, answering Santa Anna's call to surrender with a cannon shot. His men stood defiant to the end, inflicting fearful losses on Santa Anna's best troops.

Houston gained two precious weeks to discipline and train his army, and when he faced the Mexican dictator at San Jacinto, the Alamo ghosts marched with him. Travis had been right after all, and at the sight of the vengeful Texans, waving knives and hatchets and shrieking "Remember the Alamo," the Mexican army dissolved into a mob of terror-stricken fugitives.

Parker's Crossroads

Major Parker's little band was a mixed force. In addition to his own 589th Artillery, he found or was sent some half-tracks with .50 caliber quad mounts, a few armored Field Artillery observers, a tank destroyer platoon, one parachute infantry rifle squad, a cavalry reconnaissance section and, later, one gliderborne rifle company--less than 300 soldiers.

He clearly realized (as his higher headquarters did not) that he stood on critical terrain. Baraque de Fraiture stands at the crossing of the main north-south road from Bastogne through Houffalize to Liege with a good paved road westward from Vielsalm through La Roche (see Figure 1). Moreover, the Liege road was the exact boundary between the flank divisions of two corps, neither one able to hold the road in strength. Loss of the junction would permit the Germans to move in either of three directions to flank or penetrate the First Army line. It could mean disaster.

Thus, at about 1600 hours on 20 December, Parker's force went into position,

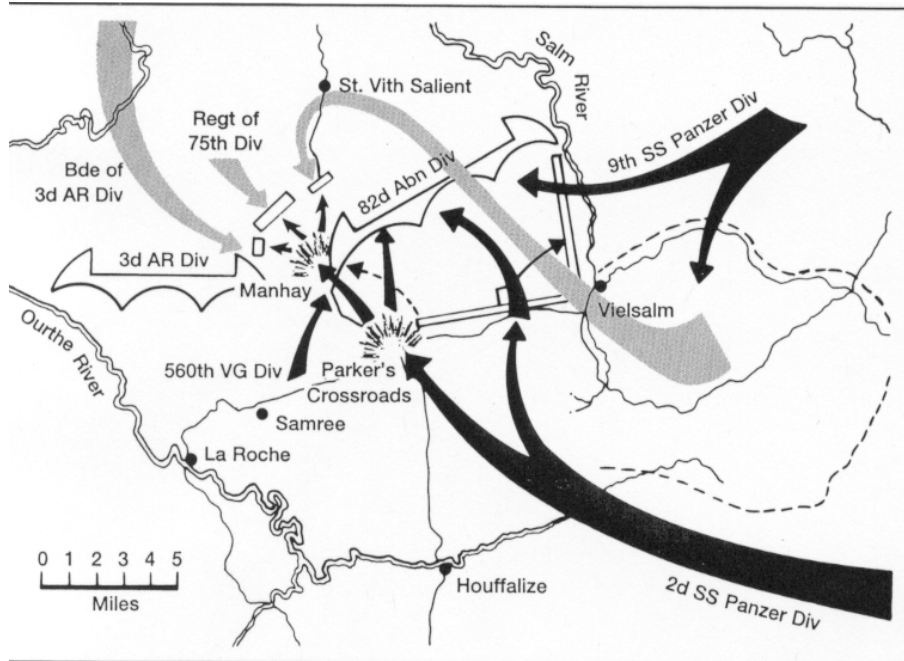


Figure 1: Parker's Crossroads at Baraque de Fraiture, Belgium, December 1944. At this critical junction, Majors Arthur Parker and Elliot Goldstein conducted an "Alamo Defense" to delay German forces, giving the 3d Armored and 82d Airborne Divisions precious time that may well have saved them.

Parker's Crossroads: The Alamo Defense

following what he considered to be competent orders from a higher authority to organize a strongpoint and fire on approaching enemy forces. Initial supplies of rations, fuel and ammunition had been drawn at Vielsalm. Parker's force was ready for action.

So far, so good. But after several successful fire missions, Parker was ordered to displace northward to Bra. (In all fairness, the junction's importance also was initially overlooked by both the 3d Armored and 82d Airborne Divisions sharing that boundary. Only later, after much action, did it gain its tactical title of "Parker's Crossroads.")

The Major's decision to ignore the order—or, more subtly, to delay until execution became impossible—lifts this action into the ranks of intrepidity, above and beyond the call of duty. He seems to have reached the decision alone. Captain Arthur C. Brown, third ranking officer at the scene and the only firing battery commander to have escaped the earlier battalion ambush, wrote, "Major Parker was ordered to withdraw from this untenable position, but he delayed doing so because he probably sensed the importance of holding up the enemy at this point. Further, he did not want to leave the people from other outfits there by themselves (he did not give me a vote!). It wasn't long before we reached the time of no return, as we became surrounded ("My Longest Week," unpublished).

Parker knew that a powerful enemy armored and mechanized infantry force lay four miles west at Samree, for he had laid observed fire on it that morning (see Figure 2). More armor noises were approaching up the road from the south, and his supply route through Regne to Vielsalm, some 11 miles east, was bare of support traffic. They were at the end of a very long limb.

The terrain around the crossroads is deceptively flat, though it stands on one of the highest elevations in the Ardennes, with broad, open fields of fire in almost all directions. But two large stands of evergreen woods afford easily infiltrated, concealed routes of approach nearly down to the junction. Once an enemy cut the road north to Manhay only four miles to the rear, the crossroads became a trap—escape on foot through snow would have been extremely difficult and by vehicle on the road an impossibility. Parker meant to stay.

On the other hand, the deep snow and trees tended to canalize enemy movements,

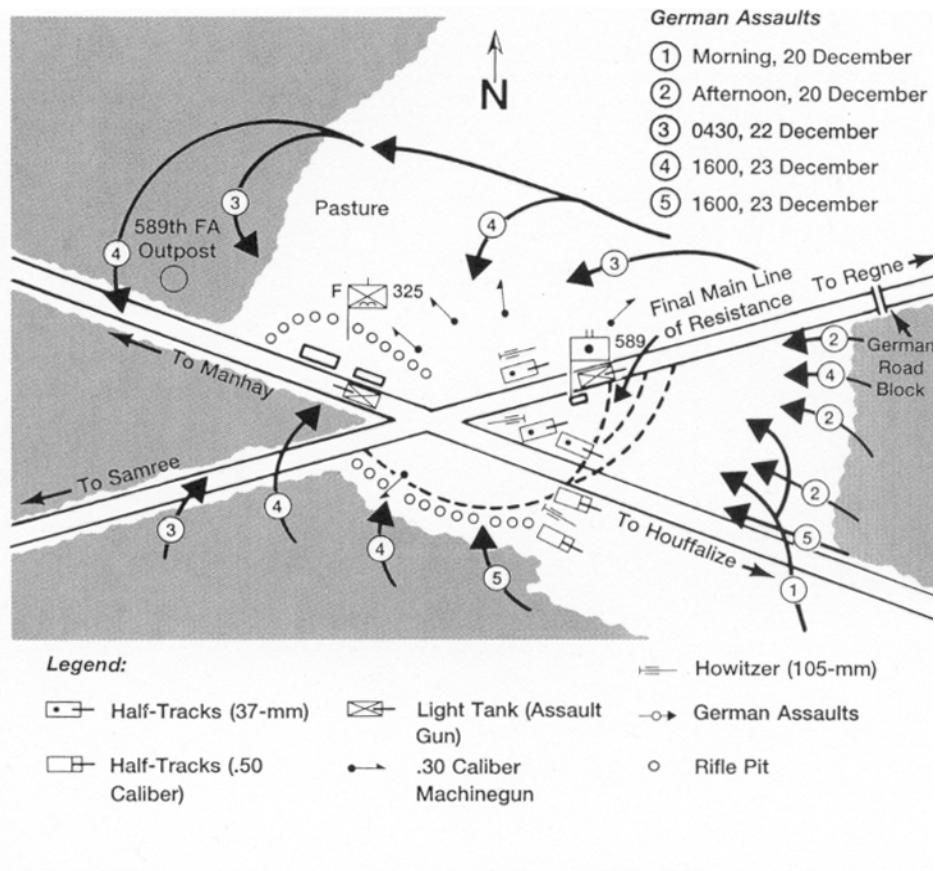


Figure 2: The "Alamo Defense" at Parker's Crossroads, 19 to 23 December 1944. Major Parker's mixed band of 300 men fought like a barnful of wildcats in last-ditch efforts against a far superior German force.

and the howitzers were laid for direct fire down the three roads: the roads to Samree, Houffalize and Vielsalm. Captain Brown had rejoined the battalion at

Vielsalm and was put in charge of the guns.

The perimeter was dug in, howitzers and machineguns emplaced, mines laid in



Francis Aspinwall (Ex-SSG HHB 589 FA)

Parker's Crossroads looking south toward Houffalize. A destroyed M-4 is on the left front next to the inn.



The survivors of the skirmish at Parker's Crossroads. The arrow on the left points to Major Parker and the arrow on the right to Major Goldstein.

the road and observers and outposts linked to battalion headquarters in a stone barn about 100 meters from the junction. Not satisfied with this, Parker had gone to Fraiture, another hamlet about a mile northeast, to request help from the glidermen holding the right (western) flank of the 82d Airborne's thin line.

He was given one rifle company and none too soon. The enemy were already feeling out his position and were quite aware of its basic weakness. During the next two days, two company-sized attacks were repulsed with losses while the Germans built up their fuel and forces.

By sunrise on 23 December, parties of Volksgrenadiers had worked around both flanks and threatened the lifeline from Manhay. In the predawn darkness, an enemy patrol was hit by the quad-.50s, its officer and an NCO taken prisoner. They were from the 2d SS Panzer Division just coming up from Houffalize, scouting for an attack position. During the previous day's hasty attacks, Major Parker was wounded by mortar shell fragments, lost consciousness and was evacuated. Major Elliot Goldstein—the original battalion executive officer but actually junior to Parker—took command.

Goldstein proved himself as able in holding the position as Parker had been in selecting it. Until the final, coordinated attack of two rifle battalions supported by tanks and preceded by a fierce artillery preparation, the Germans never managed to breach the perimeter.

As the official Army history states, "Drastically outnumbered and unable to compensate for weakness by maneuver,

the defenders of the Baraque de Fraiture crossroads had succumbed, like so many small forces at other crossroads in the Ardennes" (Hugh M. Cole, *Ardennes: Battle of the Bulge*, US Army in World War II, European Theater of Operations, 1965).

The Alamo Defense had been a splendid success, holding firm for two days against elements of an armored division whose two mechanized infantry regiments had to make a deliberate attack on a weak patchwork force in a few stone buildings. The overstretched 82d Airborne Division stretched some more, swung back and covered the gap. The 3d Armored Division was given time to form another tank-infantry delaying force just south of Manhay.

If more proof of the Alamo Defense's success is needed, it lies in the fact that, though German armor took Manhay crossroads after a bitter fight, they got no further north. "Although the 2d SS Panzer Division still held Grandmenil and Manhay on the morning of 26 December, it had lost much of its bite and dash...the 4th Panzergrenadiers had lost heavily, particularly in officers, during the fight for Baraque de Fraiture" (Cole). With elements of the 75th Infantry Division solidly in place before them, the frustrated Germans turned west again in a futile lunge for the Meuse crossings they never came close to reaching.

The 589th was effectively destroyed. A few officers and men fought or slipped through to friendly lines, but the guns, tank destroyers, armored cars and AA half-tracks were lost. Of the 116-man

glider rifle company, only 44 rejoined their parent unit. But in June 1945, the battered 106th Division was reconstituted, and Parker returned to command the new 589th.

Conclusion

To a professional readership, this account demands some conclusions. The fight at Parker's Crossroads seems to indicate several points.

First, that there will be more such actions in the future, and this one should be studied as a classic example. After the Nazi surrender, Allied interrogators learned from defeated commanders that the prime reason for the German armored mass failing to come forward as planned was "...the initial American defense had been more tenacious than anticipated; complete and rapid rupture of the defensive positions had not been achieved" (Cole).

And the official history adds, "...not only did the German planners fail to comprehend the degree of initiative that training and tradition have placed in the hands of American corps and army commanders, they also misunderstood the American doctrine, largely unwritten but universally accepted, that major formations having no pre-battle relationship may, under fluid conditions, unite on the field after the battle is joined" (Cole). Nowhere is this principle more perfectly illustrated than at Parker's Crossroads, where small units instinctively coalesced into an effective fighting force under a superlative leader.

Second, the concept is current doctrine. *FM 100-5 Operations* (May 1986) states, "Whenever an unintentional encirclement occurs, the encircled commander must understand the mission and the higher commander's intent and concept of operation clearly...he must judge whether the next higher commander wants the force to break out or to defend the position...if it cannot break out, the senior commander must continue to defend, while planning for and assisting in linkup with a relieving force." Both Parker and Goldstein demonstrated a perfect understanding of these principles as laid down in Field Service Regulations.

Third, both senior and subordinate commanders, aware of the possibilities, should plan for the worst. The key issue is the *voluntary* assumption of a last-ditch stand, even against orders. Only the most urgent and vital considerations would justify

this—if the junior commander survives, he might face court-martial and disgrace.

Nevertheless, having made the decision, the Alamo force commander must carry it through. He has committed himself and his men to victory or death—probably the latter—and he must lead by personal example. A little band of strong men, resolved to die with sword in hand can be an extremely thorny twig to grasp, and an enemy trying to meet a tight schedule may well hesitate. All the better for the Alamo force—it's just what they want.

And the higher commander should prepare himself for the loss of valuable combat power, perhaps one-third of his command, if his junior commander decides on an Alamo Defense. Both should ensure that no neglect or omission of support will suggest this desperate action and, with prudent foresight, avoid the necessity. But if it comes to the pinch, do it for the cause.

Fourth, it appears that Parker and his men went largely unrewarded for their valor. Parker received a Silver Star, Goldstein a Bronze Star with "V" device and several NCOs and soldiers got individual decorations. The French government granted the battalion a *Croix*

de Guerre with Silver Gilt Star, but no unit decoration was authorized from their own government. For a Medal of Honor performance by Parker, that seems a bit thin. Lapse of time and current regulations prohibit any further mark of recognition for an action that may very well have saved two divisions.

Fifth, we may speculate that somewhere in today's Army walks another "Major Parker"—perhaps wearing lieutenant's bars or sergeant's stripes. If it were possible, the Army should find that man and cherish him, for one day it will need him very badly. Down some cold, perilous road he will see a great adversity rolling toward him. Then he will become "Major Parker" and fight like a barnful of wildcats.

But now the Major's battle is over, and he sleeps among warriors. And in a grassy plot near the crossing of the two Belgian highways stands a carved granite boulder that proclaims it "Parker's Crossroads," where Major Arthur C. Parker III "breathed spirit" into his GIs, and all acquitted themselves most honorably against enormous odds.

Finally, one does think that, had Leonidas of Sparta had a "Major Parker" to hold

that fatal footpath, the Persians never would have turned his flank at Thermopylae.



Sergeant First Class (Retired) Richard Raymond III won Second Place in the US Field Artillery Association's 1993 History Writing Contest with this article. He's a 1954 graduate of the US Naval Academy at Annapolis and served in the Marine Corps, discharged as a First Lieutenant in 1960. Eight years later, Sergeant First Class Raymond served with National Guard Field Artillery units in Connecticut, North Carolina and Virginia. His experience with Field Artillery includes serving as Fire Direction Center (FDC) Chief, A Battery, 1st Battalion, 113th Field Artillery, High Point, North Carolina, and Battalion FDC Chief, 1st Battalion, 111th Field Artillery, Norfolk, Virginia. His last assignment was as the Brigade Intelligence Sergeant, 2d Brigade, 29th Infantry Division (Light) in Bowling Green, Virginia, before he retired from the Army in 1990. He has published military history articles in *Soldiers* and *Army* magazines and won the US Army Forces Command (FORSCOM) "Fourth Estate" award for military journalism in 1983.

NCOs and Individual Soldier Training

“ I will strive to remain technically and tactically proficient. I am aware of my role as a noncommissioned officer. I will fulfill my responsibilities inherent in that role.”

This excerpt from our creed implies that we, as NCOs, must train our soldiers not only in military occupational specialty (MOS) skills, but in individual skills as well.

I fear we're getting away from the practice of having first-line leaders train their soldiers on basic skills. More often than not, we train by committee. We take the "unit expert" and give him the task of training all the soldiers in the unit on a task. We do this because it's more efficient. It may be more efficient, but is it more effective?

On our NCO evaluation report (NCOER), we're evaluated in a lot of areas; one is training. How can we honestly evaluate

NCOs if we don't require them to train their soldiers?

Here in the 4th Infantry Division (Mechanized) Artillery, Fort Carson, Colorado, we've taken steps to hold NCOs accountable for training their soldiers. First, weapons qualification, Army physical fitness test (APFT) and common task test (CTT) are placed on Part III of the NCOER.

Second, no soldier goes to the weapons qualification range without his first-line leader. Every first-line leader trains his soldiers on weapons pre-marksmanship instruction (PMI), takes them to the zero range and, after zero, takes them to the qualification range. At the

qualification range, he watches as each soldier loads his magazines. Next, he takes each to the firing line to qualify. Once his section is complete, the entire section returns to garrison. The same approach is used to train soldiers in CTT and APFT.

I can't emphasize enough the importance of requiring our junior NCOs to get personally involved in training their soldiers. Two benefits to this approach are clear. First, we end up with better qualified NCOs because "What you teach, you learn." Second, the sections train together, promoting teamwork, morale and unit cohesion.

Committee training may be more efficient, but we need better trained first-line leaders who provide quality training to their soldiers, which results in better trained sections. Individual soldier training is the responsibility of the NCO; it starts with the first-line leader. **Lead By Example.**

CSM Daniel E. Wright, FA
4th Infantry Division (Mech) Artillery
Fort Carson, Colorado.

Redleg Heroism at Suoi Tre

by Major Ralph R. Steinke

Suoi Tre in the Republic of Vietnam is not a renowned place. It doesn't invoke the images of a Khe Sanh, Ia Drang Valley or Dak To. It was, however, a place where US infantrymen and artillerymen hit the enemy head-on in what General William C. Westmoreland at the time called "one of the single most successful actions of the war" ("The Bloodiest Week," *Newsweek*, April 1967).

In 1985, some 20 years after the battle, General Maxwell R. Thurman, then Commander of the Training and Doctrine Command, referred to the battle when discussing the importance of technical competence in being an effective leader. "The story I tell my people is the story of General [John] Vessey (retired Chairman of the Joint Chiefs of Staff)

winning the Distinguished Service Cross. He was a lieutenant colonel when he won it. He was the executive officer of a division artillery and ended up in a fire base. He and a sergeant. The sergeant did the loading, and he, Vessey, fired the howitzer, saving the fire base from being overrun (Larry Carney and Jim Rice, "I Want to Build on His Legacy," *Army Times*, September 1967).



This is the story of how two senior Field Artillerymen competently and courageously assumed the duties of their subordinates and saved many American lives. It's the story of Suoi Tre.

Operation Junction City

In contrast to the previous year, 1967 was a year of large-scale, multi-divisional operations in Vietnam. In early 1967, US and South Vietnamese armed forces launched the largest offensive to date: Operation Junction City. It was aimed at Viet Cong (VC) and North Vietnamese Army strongholds in the northern Tay Ninh Province, War Zone C (see Figure 1). This area also contained the headquarters for the Central Office of South Vietnam (COSVN), the controlling headquarters for all Viet Cong activities in South Vietnam (Major General David E. Ott, *Field Artillery, 1954-1973*, Department of the Army, Washington, DC, 1975).

Operation Junction City's main objective was to destroy one of the major enemy bases 45 miles northeast of Saigon—just north of the area that had earned the name "Iron Triangle." It was originally planned as a two-phased search and destroy operation. Phase I (22 February to 17 March 1967) called for a coordinated assault into western WarZone C. Phase II (18 March to 15 April 1967) called for a shift of emphasis to eastern WarZone C and the continuation of search and destroy operations. In both phases, the objective was the destruction of the 9th Viet Cong Division and elements of the COSVN Headquarters. Following the success of the first two phases, a third phase (16 April to 14 May) was added (Ott).

Junction City used more troops to cover a larger area than ever before in the war, and it employed more helicopters than any previous operation in the Army's

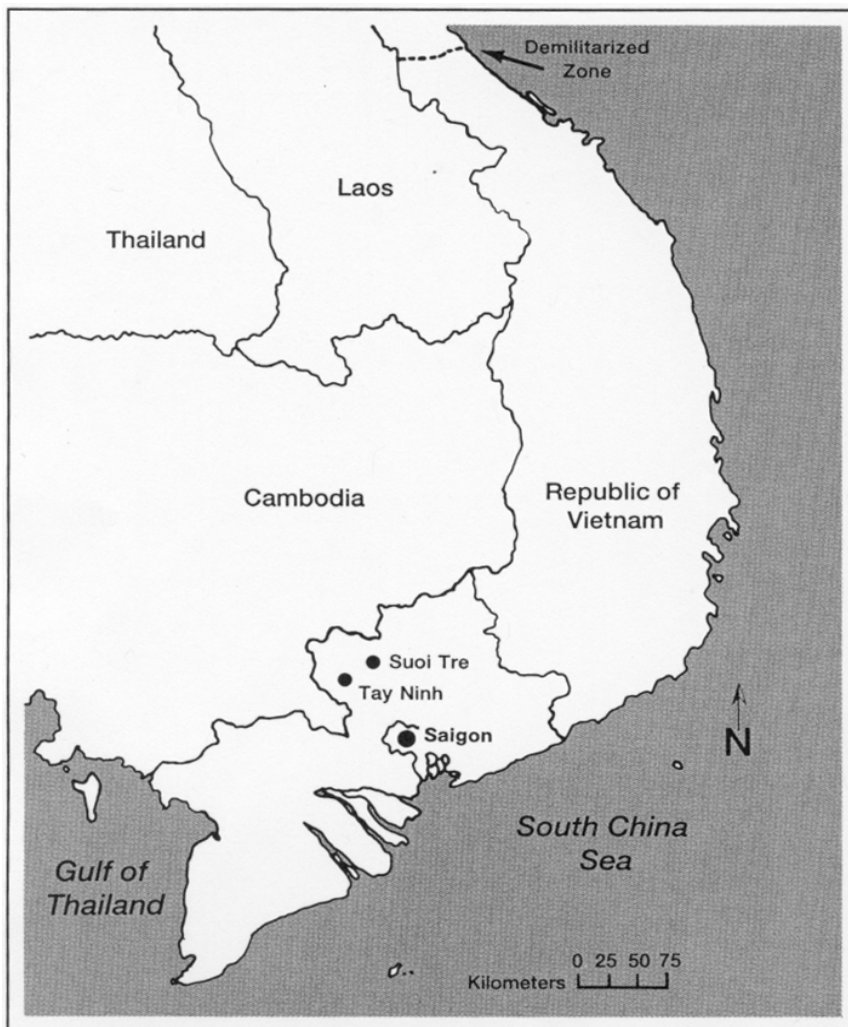


Figure 1: South Vietnam. Just north of Tay Ninh Province is Suoi Tre, the site of fierce fighting in 1967 by heroic Redlegs in Phase II of Operation Junction City.

Redleg Heroism at Suoi Tre

history (Major G. C. Lorenz, et. al., "Operation Junction City: Vietnam 1967," Combat Studies Institute, US Army Command and General Staff College, Fort Leavenworth, Kansas, 1983).

Operation Junction City was controlled by the II Field Force and included two US divisions (1st and 25th), five brigades (173d Airborne; 196th Light Infantry; 199th Light Infantry; 3d Brigade, 4th Division; and 1st Brigade, 9th Division) and the 11th Armored Cavalry Regiment. II Field Force Artillery, commanded by Brigadier General Willis D. Crittenger, Jr., provided six Field Artillery battalions and four batteries of Dusters and quad-.50 machineguns from the 5th Battalion (AWSP), 2d Field Artillery. An additional 11 artillery battalions were committed to the operation in various support roles (Ott).

Suoi Tre

On 19 March in the area near Suoi Tre, US helicopters landed the 3d Battalion, 22d Infantry (-) and the 2d Battalion, 77th Field Artillery (105-mm) (-), led by Lieutenant Colonels John A. Bender and John W. Vessey, Jr., respectively. These units were under the control of the 3d Brigade, 4th Infantry Division and were to establish Fire Support Base Gold to support Phase II of Junction City. Heavy action was not anticipated, but little did they know that "the most significant combat action of Junction City" was about to commence (Ott).

The first day's occupation of Gold began ominously. As the first three lifts of helicopters touched down, five heavy command-detonated charges were set off by the VC in the small clearing that served as a landing zone. Three choppers were destroyed and six were damaged with a toll of 15 killed and 28 wounded (Lorenz).

Company B of the 3d Battalion, 22d Infantry was assigned the eastern portion of the defensive perimeter. Company A was assigned the western half. As a result of enemy fire on departing helicopters that day, work progressed rapidly to improve perimeter defenses (Lorenz).

At 0430 on the first morning, a night patrol from Company B operating outside the battalion perimeter reported movement around its ambush site. The next two hours passed without incident. However, as the patrol prepared to return to the camp at 0630, the area erupted with a massive attack by the VC. At the same time, the base camp came under intense fire from enemy 60-mm and 82-mm mortars. Within

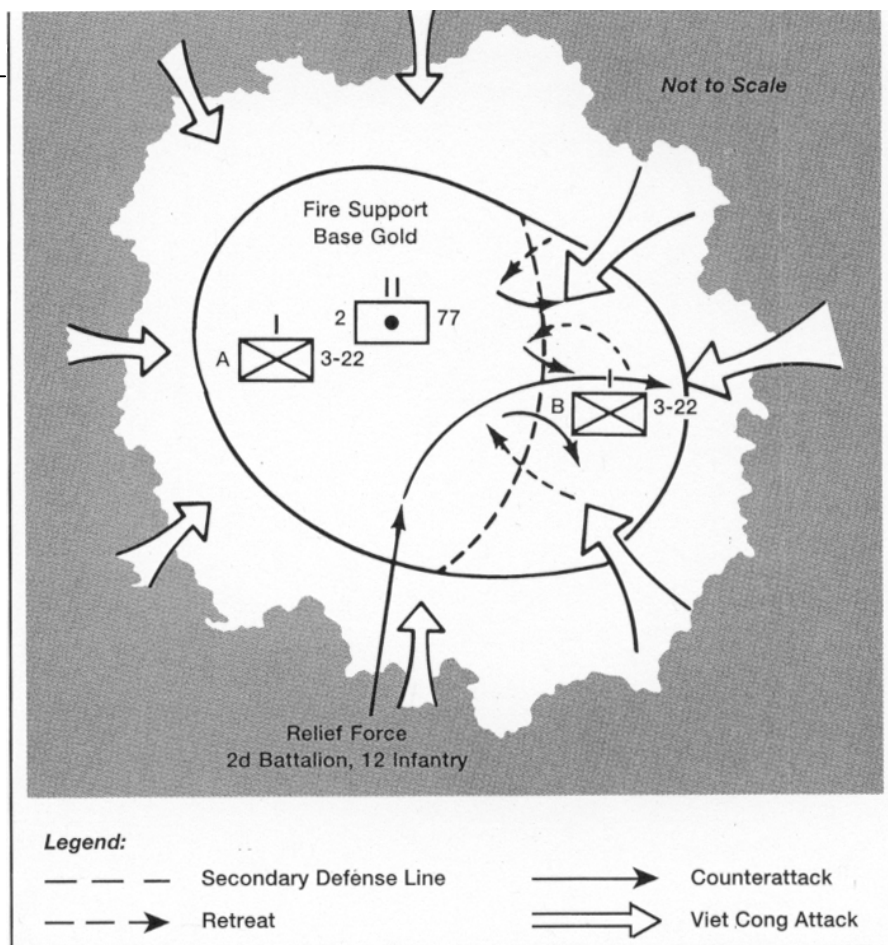


Figure 2: Fire Support Base Gold in the Battle of Suoi Tre, 21 March 1967. Lieutenant Colonel John Vessey and Sergeant First Class Raymond Childress saved many American lives by firing a howitzer point-blank at waves of attacking VC from the crack 272d Regiment. The two are credited with firing more than 200 rounds to repulse the attacks until help arrived from the 2d Battalion, 12th Infantry.

minutes, the patrol was overrun and all the men were killed or wounded (Lorenz).

Meanwhile, an estimated 650 mortar rounds fell while the VC advanced toward the perimeter. As they moved closer, enemy machineguns and recoilless rifles joined the attack as the assault troops made final preparations. Within minutes, the entire perimeter came under heavy attack by waves of VC emerging from the jungle (see Figure 2). The heaviest attacks were concentrated on the northeastern and southeastern portions of the perimeter. As the attack increased in intensity, the three artillery batteries initiated counterbattery fire in an effort to neutralize the heavy mortar concentrations that continued to rain down on the fire base (Lorenz).

During the initial assault, Company B reported that its 1st Platoon positions on the southeastern perimeter had been penetrated and that the reaction force from the 3d Battalion, 77th Field Artillery was needed. Artillerymen responded to the call,

rushing to repulse the continuing attacks (Lorenz).

At 0700, the first forward air controller (FAC) arrived overhead and immediately began directing close air strikes on the eastern edge of the perimeter. At 0711, Company B reported its 1st Platoon had been overrun by VC human-wave attacks. Shortly thereafter, the FAC was shot down. At 0752, the besieged B Company commander requested that artillery "beehive" rounds be fired directly into the southeastern and southern sections of the perimeter. (The anti-personnel, or APERS, M546 beehive round contained 8,000 eight-grain small flechettes, or darts, about one and a half inches long. Using beehive, the effect of the howitzer was that of a huge shotgun blast.)

At 0813, the northeastern section of the perimeter was overrun by yet another human-wave attack. By 0840, the entire eastern portion of the perimeter had withdrawn

to a secondary defensive line around the guns of the artillery batteries (Lorenz). Meanwhile, other battalions of the II Field Force Artillery continued to hammer outside the perimeter.

As the 3 April 1967 edition of *Newsweek* stated and the 3d Brigade, 4th Infantry Division after-action report later claimed, there was a lot of heroism on the battlefield that day. Artillerymen fought like infantrymen while Army aviators flew in ammunition and evacuated casualties under heavy enemy fire (Department of the Army, "Combat After-Action Report—Junction City," 3d Brigade, 4th Infantry Division, November 1967). However, few actions were as critical to the survival of the fire base as those taken by Lieutenant Colonel Vessey and Sergeant First Class Raymond C. Childress, the Chief of Firing Battery for B Battery, 2d Battalion, 77th Field Artillery.

While ignoring the explosions and flying shrapnel around him, Childress first attempted to rally the two firing batteries on the eastern edge of the perimeter. Seeing masses of enemy converging on a critical howitzer, he obtained permission from Vessey to begin firing beehive rounds at the enemy. (Permission was needed as the beehive was in critical supply throughout Vietnam.)

Vessey joined Childress in manning the howitzer, whose crew had been disabled. One man fired the howitzer point-blank at the onrushing waves while the other rapidly loaded the weapon. The Viet Cong

then made a concerted effort to destroy the howitzer. With the sight mechanism destroyed on the weapon, they sighted directly through the tube. Of the 40 rounds of beehive fired on the perimeter that day, Vessey and Childress fired 34 ("Combat After-Action Report"). This was the largest number of beehive rounds fired in a single engagement to date (Ott).

When Vessey and Childress ran out of beehive rounds, they began to fire high-explosive rounds at Charge 1 point-blank. Before receiving a direct hit on the howitzer (which wounded Childress for the first time in the battle), Childress and Vessey were credited with firing more than 200 rounds. They were able to hold off the enemy long enough for a relief column from the 2d Battalion, 12th Infantry to break through from the south at 0901 hours, followed by a mechanized infantry and armored column from the 2d Battalion, 22d Infantry and the 2d Battalion, 34th Armor at 0912 hours. By 0928 hours, the original perimeter had been reestablished ("Combat After-Action Report").

Upon the conclusion of the battle, there were 647 confirmed Viet Cong killed. US losses were 31 killed and 109 wounded. Documents in the area revealed that the attacking force consisted of the crack 272d Regiment of the 9th VC Division reinforced by U-80 artillery. The 272d was considered "one of the best organized, trained and equipped enemy units" in Vietnam at the time. It was also one of

the few enemy units that dared to make daylight attacks (Lorenz, et. al.). At Suoi Tre, the 272d's actions were so fanatical that previously wounded soldiers were seen being carried back into the assault on the backs of comrades.

In a recent discussion with Master Sergeant (Retired) Childress, he said, "We certainly would have been overrun if that armored column hadn't gotten through to us when they did." That may be true. However, it's equally true that if these two senior artillerymen had not reacted as they did, many more American soldiers would have died or been wounded. There likely would have been little left of Fire Support Base Gold when the relief column arrived.

For their heroic actions in saving Fire Base Gold from being overrun, Vessey and Childress were both recommended for the Congressional Medal of Honor. Several months later, they each were awarded the Distinguished Service Cross.

Conclusion

There are several observations one can make by examining the battle of Suoi Tre. Artillerymen should not forsake direct fire training or planning. Every soldier must be trained to fight as an infantry man in the face of the enemy.

Perhaps most important, commissioned and noncommissioned officers must remain technically competent in the use of their weapons. The worst observation one could make from the Battle of Suoi Tre is that it could never happen again.



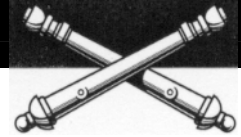
L to R: Colonel Vessey, First Sergeant Childress and Major General Roseborough, Commanding General of the 3d Armored Division, July 1970 in Germany.



Major Ralph R. Steinke is the S3 of the 212th Field Artillery Brigade, III Corps Artillery, Fort Sill, Oklahoma. He also served as the S3 of the 2d Battalion, 18th Field Artillery in the 212th Brigade. Other assignments include Platoon Leader and Liaison Officer (LNO) for the 1st Battalion, 80th Field Artillery, Brigade LNO and then B Battery Commander, also for the 1st Battalion, 80th Field Artillery, all in the 72d Field Artillery Brigade, VII Corps Artillery, Germany. Major Steinke was an Assistant Professor of Military Science at Portland State University in Oregon and Co-S3 (Exchange Officer) in the "Susa" Alpini (Mountain Infantry) Battalion, Italy's contingent to NATO's Allied Command Europe (ACE) Mobile Force. He holds a master's degree from Indiana University and is a graduate of the Command and General Staff College, Fort Leavenworth, Kansas.

Modernizing the King of Battle:

An Overview



by Dr. Boyd L. Dastrup

In response to threats to the United States national security and interests, the Army conducted an ambitious modernization program in the 1970s and 1980s. As a part of this effort, the Field Artillery rewrote doctrine, reorganized, reequipped and rearmed to make it more lethal and responsive for high-intensity conflict in Europe against Soviet and Warsaw Pact armed forces. The modernization also prepared the Army for low-to mid-intensity conflicts against relatively well-equipped military forces throughout the world.

Doctrine and Organization

Published by the US Army Training and Doctrine Command (TRADOC) after several years of work under the direction of the Commander, General William E. Depuy, the 1976 edition of *FM 100-5 Operations* took vital steps toward preparing the Army for high-intensity conflict in Europe.

Besides acknowledging the lethality of modern weaponry demonstrated in the Arab-Israeli War of October 1973 and the numerical superiority of Soviet and Warsaw Pact military forces, the manual articulated a doctrine for fighting outnumbered and winning in Europe.

Although the manual sought to imbue the Army with a winning attitude to erase the bitter experience of Vietnam, many Army officers criticized it for placing too much emphasis on the defense at the expense of the offense and relying upon huge amounts of firepower and attrition to survive the first attack (John L. Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine, 1973-1982*, TRADOC Historical Office, Fort Monroe, Virginia, 1984).

As General Depuy and other Army officers, such as General Donn Starry, who succeeded Depuy as commanding general of TRADOC noted, the 1976 manual also did not consider the impact of the Soviet's second echelon that was beginning to play a greater role doctrinally. To prevent the second echelon from joining the first echelon to help overpower NATO defenses with sheer numbers required a more aggressive doctrine than the cautious one outlined in the

1976 manual.

After extensive work over a period of several years, TRADOC published the 1982 edition of *FM 100-5* that outlined "AirLand Battle," a term borrowed from the 1976 edition, to deal with the second echelon. AirLand Battle explained that US forces had to disrupt the second echelon's advance before it could join the first echelon in the main battle (Lieutenant General David E. Ott, letter to author, 12 February 1993).

To prevent the defense from being overwhelmed, the Field Artillery School, Fort Sill, Oklahoma, and other TRADOC branch schools turned to interdiction as a solution. As the Field Artillery School explained early in 1980, interdiction involved more than just interrupting the enemy's sustaining forces by hitting lines of communication, logistics and replacements. Rather, it meant canalizing, creating gaps in formations and delaying reserves with tactical air and long-range Field Artillery to blunt the force of the second echelon, neutralizing the enemy's numerical and firepower superiority (Romjue, *From Active Defense to AirLand Battle*).

Although AirLand Battle was critical, force structure changes also played an integral role in meeting the challenges of high-intensity conflict in Europe. After designing several different divisions between 1976 and 1980 to replace the Reorganization Objectives Army Division (ROAD) of the 1960s, the Army finally settled on Division 86 late in 1980. Known as the heavy division, it had about 20,000 personnel and 10 maneuver battalions supported by 72 M109 self-propelled 155-mm howitzers, eight M110 self-propelled 8-inch (203-mm) howitzers and nine multiple-launch rocket system (MLRS) launchers.

With the realization that the personnel resources upon which Division 86 had been conceived would not exist in the 1980s, TRADOC subsequently streamlined Division 86 as part of the Army of Excellence reforms. The Army of Excellence heavy division approved in 1982 had fewer people (17,750 to 18,750), had 72 M109 howitzers and nine MLRS launchers, transferred slow-moving but powerful M110 howitzers to the corps where they could continue providing nuclear missions and were less vulnerable and gave the heavy division 18 percent more firepower than the ROAD division (Romjue, *Division 86*, TRADOC Historical Office).

Equipment

As vital as developing new doctrine and force structures were, replacing aging Field Artillery systems with new ones also confronted the Army. Given the nature of the threat, division and corps commanders would have to survive intense artillery barrages while destroying large numbers of tanks and mechanized vehicles at the same time. For the Field Artillery, this



involved providing close support to the maneuver arms and concurrently neutralizing or suppressing the enemy's numerically superior fire support systems.

Target Acquisition. Besides developing counterfire doctrine and the fire support team (FIST) in the mid-1970s, the Field Artillery also had to acquire new target acquisition



Q-36

1990s (Letter, Office of the Deputy Chief of Staff for Research, Development and Acquisition, to "See



RPV

(Disposition Form, "SUBJECT: Trip Report AHIP ILSMT Meeting," 7 September 1982).

Declining budgets, however, forced the modification of target acquisition modernization plans. To reduce costs and eliminate redundancy, Congress stopped funding the Aquila RPV program and consolidated the military services' RPV programs late in 1987 in favor of a family of unmanned aerial vehicles (UAVs) to be introduced sometime in the 1990s.

About the same time, budget cuts along with new tests that reinforced the OH-58D's ability to perform the scout role and the push for an armed multipurpose light helicopter for contingency operations caused the Army to readjust its fielding priorities for the



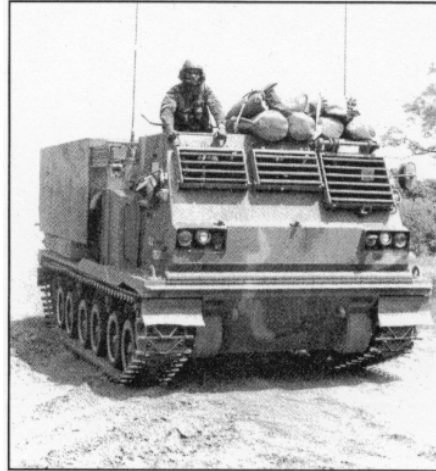
OH58-D (Sam Orr)

systems. Through the Firefinder developmental program, the Field Artillery outlined plans early in the 1980s to replace the Firefinder AN/TPQ-36 and AN/TPQ-37 radars introduced in the late 1970s with an enhanced Q-36 radar in the

1990s (Letter, Office of the Deputy Chief of Staff for Research, Development and Acquisition, to "See Distribution," "SUBJECT: Guidance Letter, AN/TPQ-37," undated).

This radar would be complemented by the Aquila remotely piloted vehicle (RPV) and the OH-58D observation helicopter that would designate targets for Hellfire, Copperhead and other laser-guided munitions for pinpoint accuracy. Both systems also would provide the Field Artillery with over-the-hill target acquisition capabilities

OH-58D. The Army removed the Field Artillery fire support mission as the helicopter's top priority and made armed reconnaissance the top priority, followed by multipurpose light helicopter requirements and then fire support. With the change in priorities, the Field Artillery lost the organic capability to lase over-the-hill targets from the air and would



MLRS

new weapon system," the MLRS, which had been under development since the mid-1970s, occupied the "heart of our



ATACMS

mass huge amounts of fire on a target rapidly and accurately, employ "shoot-and-scoot" tactics to survive and had some capability of hitting second-echelon targets ("Fire Support Mission Area Analysis Executive Summary (Classified)," Material Used is Unclassified).

Although the MLRS helped offset the threat's numerical superiority and could furnish effective counterfire, the Army still required an artillery system to engage the second echelon. To this end, the Department of Defense initiated the Assault Breaker Program in 1978 to design surface-to-surface and air-to-surface missiles to employ against second-echelon forces. Out of the Assault Breaker Program and its successor came the Army tactical missile system (ATACMS), which was fielded in 1990 (Controller General, Report to Congress, "Decisions to be Made in Charting Future of DoD's Assault Breaker," 28 February 1981).

have to rely upon another branch to perform this task ("1990 US Army Field Artillery Center Fort Sill Annual Historical Review").

Rockets and Missiles. In the meantime, the Army had to acquire new Field Artillery weapon systems and munitions. Billed as the Army's "most spectacular

[the Army's] effort to redress the counterfire problem." It was a top developmental priority for the Army and the Field Artillery as the 1980s opened (Bruce Gudmundsson, "The Multiple Launch Rocket System: On Time and Under Budget," Case Program, Kennedy School of Government, Harvard University, 1987). Introduced early in the 1980s, the MLRS gave the Field Artillery the unprecedented ability to

Cannons. Concurrently, the Enhanced Self-Propelled Artillery Weapon System Study of 1979 pointed out other ways to overcome the numerical disadvantage. The study determined that cannons had to be capable of continuous operations and have high rates of fire.



M109A4

Although modifications to the self-propelled M109 155-mm howitzer since the weapon had been introduced early in the 1960s had improved it, the Army required an entirely new system of

howitzers, ammunition vehicles and command and control vehicles. Because developing a totally new system was too expensive, the Army chose to upgrade the M109 further through the HELP, or Howitzer Extended Life Program (Briefing, "SUBJECT: 155-mm Self-Propelled Improvement Program," undated).

Even though HELP corrected some of the M109's deficiencies, the Division Support Weapon System Study of 1983 found grave shortcomings with the HELP howitzer. Based on the study's recommendations, TRADOC initiated work on the Howitzer Improvement Program (HIP) howitzer.



Paladin (Alliant Tech Systems)

Because HELP and HIP were concurrent, ongoing M109 projects, the Army combined them into one program in 1985 so only a single

howitzer would be fielded early in the 1990s. Comprised of the latest technology, the HIP howitzer, designated the Paladin howitzer in 1990, would employ shoot-and-scoot tactics and effectively mass fires ("1986 US Army Field Artillery Center and Fort Sill Annual Historical Review").

Aware that the HIP howitzer stretched the upper limits of M109 performance for close support and lacked the growth potential to provide indirect fire support into the 21st century, the Field Artillery School concurred with the requirement for a totally new cannon as recommended by the Division Support Weapon System Study and Enhanced Self-Propelled Artillery Weapon System Study. After exploring various ways of meeting the challenge, combat developers in the school envisioned replacing the HIP with the advanced Field Artillery system

(AFAS) (Fact Sheet, "SUBJECT: AFAS-C," 12 September 1988).

As combat developers in the Field Artillery School explained, the AFAS with its ammunition resupply vehicle, the Field Artillery resupply vehicle (FARV), would incorporate state-of-the-art technology and also build upon proven HIP technology. The weapon system would substantially increase lethality, responsiveness, survivability, mobility, sustainability and availability and reduce manpower, operational and maintenance costs and the logistical burden.

Such capabilities would permit the AFAS to defeat moving and stationary enemy artillery and armor of the first and second echelons and a variety of high-value targets, such as air defense systems and engineer vehicles. The AFAS also would operate as an individual weapon or collectively in a platoon or battery, depending on the tactical requirements and level of enemy counterfire (Briefing, "SUBJECT: FA Test Bed Program," undated).

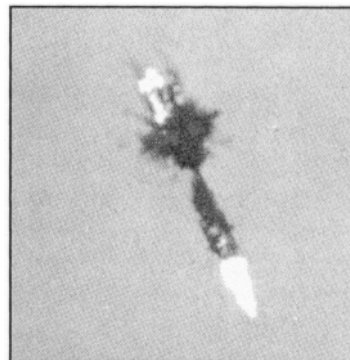
Munitions. The need to offset the threat's numerical superiority in weapons simultaneously encouraged further development of precision munitions.

Such munitions had performed well during the latter years of the Vietnam War and the Arab-Israeli War of 1973, and they had the potential to reduce the number of rounds required to neutralize enemy armored vehicles.



Copperhead

Late in the 1970s, the Field Artillery introduced the laser-designated 155-mm Copperhead projectile and started work in the 1980s on the sense-and-destroy armor munition



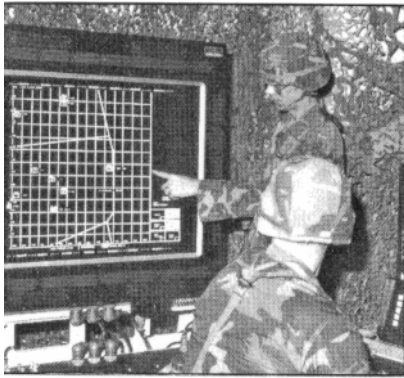
SADARM (LTV Missiles Div)

(SADARM), using the MLRS and 155-mm howitzer as delivery systems. Unlike Copperhead, SADARM was not yet in production at the end of the 1980s and did not require a laser designator to guide it to the target. These precision munitions, along with dual-purpose improved conventional munitions (DPICM) and other sophisticated munitions, helped increase the Field Artillery's lethality significantly ("1989 US Army Field Artillery Center and Fort Sill Annual Historical Review").

Command and Control. Even though new missiles and cannons with greater power and ranges and new munitions were being developed to engage echeloned forces, to overcome the numerical disadvantage and to fight a high-intensity conflict, the Field Artillery simultaneously required effective command and control systems to orchestrate their effective use. The Fire Support Mission Area Analysis of 1980 pointed out that the

tactical fire direction system (TACFIRE) needed to be replaced with a state-of-the-art command, control and communications (C³) system.

In 1981, the Army and Department of Defense approved a plan to develop the advanced Field Artillery tactical data system (AFATDS) for fielding in the 1990s to give the necessary automation to perform fire support functions. This system would integrate all types of fire support into the maneuver plan and attack the highest payoff targets with the most effective munition at the critical time. Ultimately, AFATDS would be incorporated into the Army command and control system (ACCS) and provide a new dimension in processing capabilities ("Army Modified AFATDS Program Plan Executive Summary," 30 August 1985).



AFATDS

Light Artillery. With the possibility of fighting low- to mid-intensity conflicts increasing as the 1970s drew to a close, the Army envisioned the need to devote more attention to light forces than previously. To this end, Army Chief of Staff, General Edward C. Meyer, and General Starry met in September 1979 to discuss concepts for a light division with the capability of rapidly deploying for contingency operations or reinforcing military forces in Europe to give it a dual mission ("Captain Suzann W. Voight, "Much Ado About Something," *Field Artillery Journal*, July-August, 1986).



M198

TRADOC developed Infantry Division 86. Endorsed by the Army in December 1980, the division had about 17,000 personnel, eight motorized infantry battalions, two mobile protected gun battalions and Field Artillery, air defense, anti-armor and support units.

Reflecting the European orientation of its creators, the division's artillery consisted of a headquarters and headquarters battery, a target acquisition battalion, three direct support (DS) M198 towed 155-mm howitzer battalions (72 howitzers) and a general support (GS) battery of nine MLRS

launchers. Equally important, the division had TACFIRE, the battery computer system (BCS) and other high-technological equipment to make fire support responsive to the needs of the maneuver commander. This made the artillery able to fight a high-intensity conflict in Europe, if necessary, or low- to mid-intensity conflicts in other parts of the world (Romjue, *A History of Army 86: The development of the Light Division, the Corps and Echelons Above Corps, November 1979-December 1980*, TRADOC Historical Office, 1982).

Four years after General Meyer had approved Infantry Division 86 for implementation, Congress mandated a ceiling



M102 (LT Russ Willie)

of 780,000 personnel in the Army. This, along with the ever-growing possibility of fighting low- to mid-intensity conflicts, caused the Army to reevaluate

Infantry Division 86. Directed by the Army Chief of Staff, General John A. Wickham, TRADOC designed the Army of Excellence Light Infantry Division during the mid-1980s. Lacking tanks and heavy equipment, the 10,000-person division could be deployed on approximately 500 C-141 aircraft sorties and provide the strategic flexibility that Infantry Division 86 did not offer. The division artillery had a GS battery of M198 howitzers (eight) and three DS battalions of M102 towed 105-mm howitzers (54), sacrificing firepower to enhance deployability

(US Army Chief of Staff, White Paper, "Light Infantry Division," April 1984).

Aside from operations in less developed countries, the Army of Excellence Light Infantry Division could reinforce areas where the Army already had troops,



M119 (MAJ Charles Pope)

such as Europe, if necessary. Although doctrine was being developed to team heavy and light forces together as the 1980s drew to a close, the Army preferred employing the light division in low- to mid-intensity conflicts because the division was foot-mobile and lacked the heavy

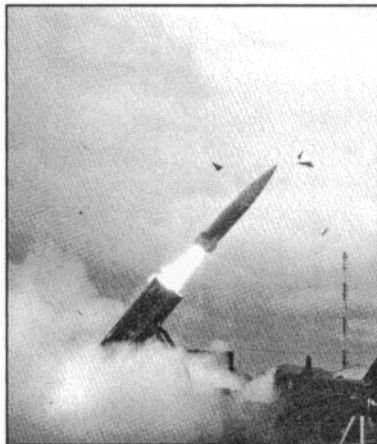
equipment to fight armored forces in a high-intensity conflict (Edwin W. Besch, "Are Light Divisions Too Light," *Army*, February 1985).

If the Army of Excellence Light Infantry Division was to perform effectively, it had to have appropriate weapons and equipment. Although the Army planned to replace the M102 with the M119 towed 105-mm howitzer and complement the latter with the M198 howitzer, some Army officers envisioned the requirement for even better counterfire capabilities than the M198 howitzer offered.

As early as 1982, the 9th Infantry Division (Motorized) recognized the requirement for a light multiple rocket launcher system. But the Field Artillery School did not see the need for such a system at the time because the light division would be primarily employed in contingency operations where the demand for counterfire would be low. Without support from the Field Artillery School, work on a light multiple rocket launcher stalled ("1990 US Army Field Artillery Center and Fort Sill Annual Historical Review").

By the end of the 1980s, the Field Artillery School had altered its position on a light multiple rocket launcher system as the possibility of contingency operations continued to heighten with the waning of the Cold War. Even though the corps could furnish counterfire to light forces with MLRS and towed 155-mm howitzers, the availability of aircraft to transport these systems could limit or even preclude employing them during the early stages of a conflict.

This would compel early deploying light forces to rely on close air support (CAS), naval gunfire and attack helicopters for targets beyond the range of their DS artillery. Weather, enemy air defenses and other problems, however, made the availability of this kind of fire support problematic and a light multiple rocket system a



HIMARS

necessity. In view of this, the Field Artillery School began pushing the high-mobility artillery rocket system (HIMARS) by 1990, with the objective of having it available sometime in the 1990s (Draft White Paper, "SUBJECT: Light Artillery Rocket System," 19 March 1990).

Obtaining automated C³ for the light forces also occupied the Field Artillery School's time during the 1980s. Even though the light division had the BCS for technical data solutions and some digital C³, its automation clearly lacked the capabilities offered by TACFIRE. Aware of this and AFATDS that was scheduled for fielding in the 1990s, the Army began pushing to introduce automated C³ capabilities for the light division early in the 1980s.

After debating the merits of several different systems during the middle years of the 1980s, the Field Artillery finally settled on light TACFIRE (LTACFIRE), the FIST digital message device (DMD), digital communications

terminal (DCT) and forward entry device (FED) as an interim system until AFATDS could be fielded (Memorandum for Commander, TRADOC, "SUBJECT: TRADOC System Manager FSC³ [Fire Support C³] Third Quarterly FY 88 Report," 30 June 1988).

With the exception of work slowing down on Firefinder radar modifications for light forces as a result of budget cuts, the Field Artillery School experienced success in equipping and organizing fire support for heavy and light forces. As the 1980s were drawing to a close, new field pieces and equipment were being introduced, while automated C³ systems were being adopted.

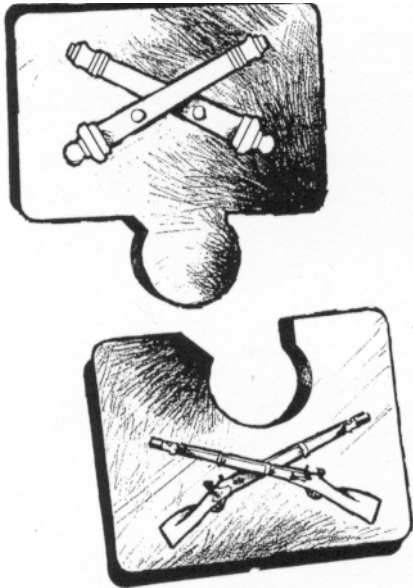
Unexpectedly, Operation Desert Storm offered the opportunity to test the new systems in combat. Despite a significant Iraqi advantage in both numbers and range capability, the Field Artillery's "system of systems" (weapons and munitions, C³, target acquisition and support systems that fit together harmoniously into one coherent system) helped overwhelm the enemy. The integration of the systems took away the enemy's ability to locate targets beyond the FLOT and silenced all the opponent's artillery that dared to fire. Simultaneously the system massed artillery fires, provided timely support to the maneuver arms and allowed commanders to exploit the effects of fires. Simply stated, Operation Desert Storm validated the intensive modernization effort of the 1970s and 1980s (Memorandum for Director, Center for Army Lessons Learned, "SUBJECT: Operation Desert Storm Emerging Observations," 10 July 1991).

As the modernization efforts suggested, the Army envisioned high technology and better organization in the 1970s and 1980s as a means of fighting on the modern battlefield. Computers, precision munitions, new weapon systems and radars improved the Field Artillery's lethality, while force structure reforms facilitated exploiting the new systems by improving organizations.

When completely introduced, the various modernization efforts, which were in different stages of development at the beginning of the 1990s, would revolutionize the Field Artillery's ability to fight across the spectrum of conflict.



Doctor Boyd L. Dastrup has been the Command Historian for the US Army Field Artillery Center and Fort Sill, Oklahoma, since 1984. He's the author of the book *King of Battle: A Branch History of the United States Army Field Artillery*, published by the Training and Doctrine Command Historical Office, Fort Monroe, Virginia, in 1992. The book traces the history of Field Artillery, beginning with the creation of the U.S. Army in 1775 and ending in 1980, just as AirLand Battle Doctrine was being introduced. He's also the author of *U.S. Army Command and General Staff College: A Centennial History*, by Sunflower University Press, Manhattan, Kansas, published in 1982 and *Crusade in Nuernberg* by Greenwood Press, Westport, Connecticut, published in 1984. Dr. Dastrup's newest book, *The Field Artillery: History and Source Book* is scheduled for publication by Greenwood Press this fall. He has published other historical articles in *Field Artillery* and *Army History*. He holds a Doctorate in History from Kansas State University and served as the Historian for Sheppard Air Force Base, Wichita Falls, Texas, for three years.



The Infantry Battalion Commander and His FSO— *Focusing on Training*

by Lieutenant Colonel Karl W. Eikenberry, IN

This article, the first in a two-part series on the infantry battalion commander and his fire support officer (FSO), discusses techniques useful to both as they focus on training. The second article will discuss tactics and team building.

Infantry In Battle, published in 1934 by then-Colonel George C. Marshall, discussed small-unit tactics as illustrated from examples of World War I. Its examination of the infantry-artillery team is, for the most part, still relevant almost 60 years later. Quoting selectively:

If the physical distance, and sometimes greater mental distance, that separates the infantry and artillery on the battlefield is to be spanned, the following considerations should be observed:

- *Intellectual liaison and mutual familiarity between the arms so that the infantry will not call on the artillery to do the impossible, the unnecessary, or the unsuitable; while the artillery, for its part, will be capable of appreciating the infantry's problems.*
- *A moral liaison, reciprocal esteem, confidence and friendship, preferably personal friendship between the two elements of the particular infantry-artillery team.*
- *Previous joint training of the two specific units of the team.*
- *Careful selection and actual training with infantry units of [the] artillery liaison officer.*

In 1993, effective battlefield integration of the Infantry and Field Artillery still turns on the principles of quality combined arms training, sound tactics and maneuver-fire support team cohesiveness. Our challenge is to continuously search for and adopt techniques that enable us to adhere to these principles under ever more rapidly changing conditions of organization, weaponry and doctrine.

This article addresses some techniques an infantry battalion commander and his FSO might find useful as they focus on training. Although I examine the fire support system in an infantry battalion, much of what follows also is applicable to mechanized and armored units.

Complementary Training

A battalion FSO must maintain a delicate balance in meeting the training demands of his parent artillery battalion

and those of the infantry battalion he supports. Recognizing the FSO's need to sustain both the collective and individual skills of his fire support section—the fire support element (FSE) and company fire support teams (FISTs)—the infantry battalion commander must be judicious in his request for artillery participation in maneuver exercises.

Maneuver units are inclined to use a rote approach in developing collective training, always ensuring the "combined arms box" has been checked while not necessarily seeing to the quality of the experience for the supporting arms. In designing and refining long- and short-range training plans, an infantry battalion commander is best served by allowing his FSO an opportunity to offer input.

If both the infantry and artillery display flexibility and creativity, outstanding results can be obtained. For example, an FSO might suggest a planned mortar

live-fire exercise (LFX) be expanded and modified to provide an opportunity for him to evaluate his platoon forward observers (FOs). He might request his FISTs participate in upcoming helicopter training but *not* accompany the rifle companies on infiltration attacks subsequent to their air assault insertions because of inadequate resources available to realistically simulate indirect fires during that exercise.

Complementary maneuver and fire support training and evaluation outlines (T&EOs) must be prepared for any infantry battalion exercise that includes elements of the fire support section. The FSO's attendance and active participation in all his supported unit's key training strategy sessions—including those concerning the quarterly training guidance and briefings and the weekly battalion training meetings—help establish the basis for mutually supportive planning.

In developing the infantry-artillery fire support team, a wide range of training

options are available to the infantry battalion commander and his FSO. The following types of training highlight some of the more useful options.

Combined Infantry-Observer LFX Training. Infantry commanders and leaders and their FIST counterparts periodically should train together to improve their observed-fire procedures. Artillery and mortar LFXs can be structured to occasionally allow the infantry-artillery team (e.g., a rifle platoon leader and his FO) to call for and adjust fire. Junior infantry leaders receive little schoolhouse instruction on observed-fire techniques and benefit greatly from time on the observation posts (OPs), better learning the capabilities and limitations of indirect-fire systems. In adopting a holistic approach to improving an infantry battalion's fire support battlefield operating system (BOS), the battalion commander and FSO also should make provisions for the scout platoon to spend time at the OPs to conduct observed-fire training under the tutelage of trained artillerymen. (I talk about the payoff of such training in the tactics section of the second article in this series.)

Training Set, Fire Observation (TSFO) Rifle Company-FIST Exercise. This all-day exercise begins with issuing a battalion order for a defensive mission to a rifle company commander and his FSO. They, in turn, prepare a company order that's issued to the rifle platoon leaders, company FIST and mortar section leader. After completing the planning and preparation phases (including the submission of company fire and obstacle plans), an enemy attack scenario unfolds on the TSFO screen allowing the participants to execute their plan. Radio nets are fully operational, and the battalion FSE and mortar fire direction center (FDC)

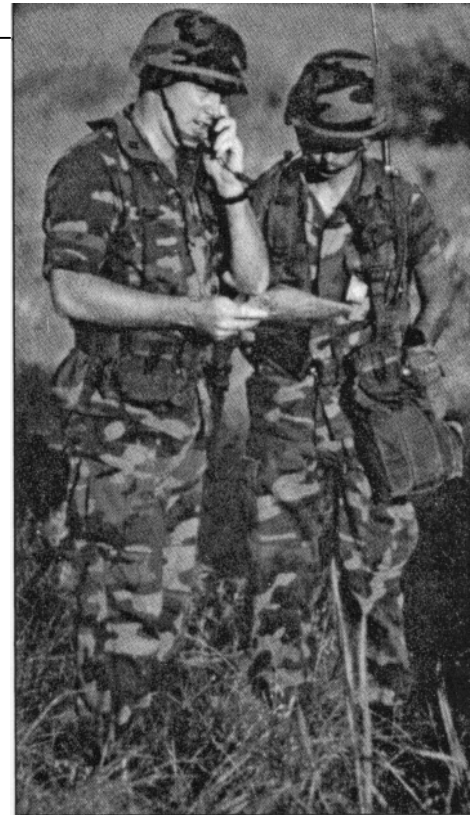
nodes are replicated. A combined after-action review (AAR) given by the battalion commander (chief maneuver evaluator) and his FSO (chief fire support evaluator), assisted by platoon-level evaluators, follows the execution phase.

Such an exercise, if resourced properly and vigorously promoted by the battalion commander and FSO, is an outstanding way to train a rifle company's planning, preparation and execution of fire support.

Rifle Company "Free-play" Indirect-Fire LFX. Safety and range regulations can, and frequently do, reduce the indirect fire support of a maneuver LFX to a canned set of responses to well-rehearsed events. Rifle company free-play indirect-fire LFXs address these limitations. The exercise is based on a tactical offensive or defensive scenario and is similar to the TSFO drill described previously.

After the planning and preparation phases, the rifle company commander, his platoon leaders and the supporting FIST overlook the impact area from separate positions (which corresponds to the maneuver or engagement area in the scenario) and respond to a series of events (e.g., a detailed description of an enemy contact at a specific point in the impact area). The participants either remain static and notionally maneuver units or only move to the extent the free-play condition isn't affected. The exercise is ideally supported by not only battalion and company mortars, but by firing batteries as well. Again, the infantry battalion commander and his FSO serve as chief evaluators.

Because this is a free-play exercise and a mission is always fired (provided it will fall within the impact area), the infantry-artillery team has an unparalleled opportunity to train observed-fire procedures, fire support plan

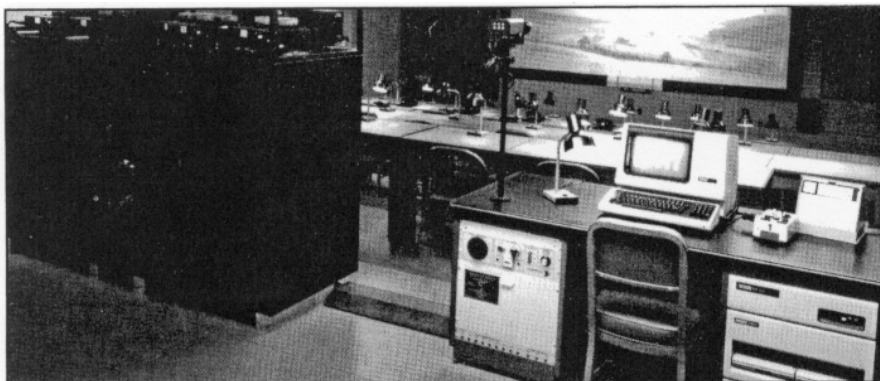


The FSO (with the infantry battalion commander) serves as a chief evaluator of the infantry-artillery training.

execution and communications. Participants also gain an appreciation of the actual response times they can expect from the fire support system.

Small-Unit LFXs. Rifle platoon LFXs generally should include indirect fire, with possible exceptions such as a trench-line assault where the planners wish to preserve the objective for multiple iterations. Company LFXs always should include indirect fire. However, as discussed previously, planners must be cognizant of safety and range limitations up front. It's best to develop an ambitious set of infantry-artillery team training objectives and then modify and pare these back, as necessary, when confronted with the reality of range fans.

The infantry and artillery LFX planners must jointly walk the terrain and identify those points that will best facilitate the realization of key training objectives. For example, if an infantry battalion is planning a rifle platoon attack combat drill LFX and, after walking the terrain, they note the available range has a small hill affording excellent visibility just beyond the line of departure (LD), the planners may alter the training. Although not part of the original concept, after walking the



A TSFO Rifle Company-FIST Exercise is an outstanding way to train a rifle company's planning, preparation and execution of fire support.



Infantry and artillery LFX planners prepare their vehicles to recon the terrain to identify points that will best facilitate the realization of key training objectives.

ground, the battalion commander and FSO might determine that a rifle platoon leader and his FO occupying the elevated position would be able to call for and adjust fire against targets emplaced out to 1,200 meters. At that range, the minimum safe distance of indirect fire impact from troops isn't the severe constraining factor it becomes when planning fire support for the close coverage of the rifle platoon's assault of an enemy position farther down range. Hence, the battalion commander and his FSO decide that by having a notional BRDM (armored infantry fighting vehicle) engage the platoon immediately after it crosses the LD with long-range machinegun fire, the platoon leader, unable to respond effectively with any of his organic weapons, will (hopefully) move to the rise in the ground with his FO and initiate a call-for-fire.

They also decide maneuver and fire support observer/controllers (O/Cs) can add to the realism by assessing the rifle platoon as pinned down (i.e., no forward movement permitted). This addition works as long as no effective fires are brought against the BRDM, allowing the platoon to move if (and as long as) the BRDM is obscured by a screening mission. The BRDM only withdraws when accurate indirect fires are brought to bear.

The point is that, given a certain range and allocation of ammunition, good results will depend on the quality and compatibility of resources and terrain. Consequently, the battalion commander and FSO must plan to modify T&EOs to best take advantage of the hand they're dealt.

A final comment on small-unit LFXs. If at all possible, the infantry battalion

commander and his FSO must ensure objectives or targets are designed that can be attacked with indirect fire and subsequently examined by the maneuver force during the AAR. An infantryman who gets to count shrapnel holes on target silhouettes inside bunkers that were hit by artillery and mortar fire before his close assault gains an appreciation for indirect fire not possible by merely watching or, worse yet, only hearing explosions far away in an impact area.

Battle Staff Training. It's essential for the battalion FSO and his FSE to fully participate in the infantry battalion's battle staff training. The infantry battalion commander and FSO need to use this time to work through, in painful detail, how the fire support system will be integrated into each step of the staff planning process, in what format the operations orders will be presented, how rehearsals will be conducted and which standing operating procedures (SOPs) will be adopted to govern tactical operations center (TOC) operations and displacements. A formal approach oft repeated establishes a solid foundation upon which an increasingly confident battle staff team can begin to flourish and improvise.

This article doesn't address the more routine forms of infantry-artillery team training, such as major field training exercises (FTXs) because they're frequently events beyond the planning domain of a maneuver battalion commander and are well-understood by most.

In discussing different types of training, I add that an infantry battalion FSO also must ensure his fire support section is

trained to standard in infantry field craft. Moving long distances across difficult terrain, coping with harsh weather and the like are art forms and must be practiced. An FSO needs to consider this as part of his training formula and may see the wisdom in joining a maneuver exercise for no other reason than to improve his soldiers' field skills.

Finally, in reviewing infantry-artillery training methodologies, I stress that any combined exercise must conclude with combined AARs. The infantry battalion commander and his FSO need to work together before the training events to build logical AARs that reinforce fire support doctrine. An AAR that concludes with the maneuver O/C asking the fire support O/C, "Do you have anything to add?" (as an afterthought) represents a poor effort indeed.

Mortar Training. An infantry battalion commander and his FSO should devote considerable effort to establishing a close training relationship between the fire support section and the battalion and rifle companies' mortars. In the absence of such a relationship, the infantry battalion's only organic indirect-fire weapons system will be under used or misused when called to task.

First, the mortar platoon or company mortar section sergeants should not plan mortar LFX training in isolation. The infantry battalion commander needs to insist his mortarmen and fire supporters regard any mortar shoot as an infantry-artillery team training event. As mentioned previously, combined T&EOs are prepared, and both the mortarmen and FSO (battalion or company) brief their joint plans at battalion training meetings. Together, they agree on the scope and sequence of fire missions and develop a supporting scenario.

Mortar platoons and sections always should train against the standards of accuracy and time outlined in their mission training plans (MTPs) but often don't when left to their own devices. Likewise, a battalion FSO might be surprised to see the laxness that sometimes pervades a FIST occupying an observation post, training to no demonstrable standards, as it calls for mortar fire. (I use the term "occupying" for want of an exact tactical term to describe an often non-tactical posture.) The problem is easily overcome by detailed planning, chain of command interest

and visibility during training (both infantry and Redleg) and regular combined mortar-fire support AARs. It's remarkable how the one kilometer separating the mortar and artillery observers quickly becomes a chasm dividing the self-righteous from the incompetents; informal AARs attenuate such nonsense and help build the team.

A strong battalion FSO also will look for opportunities to occasionally include his infantry battalion's mortars in artillery LFXs. Combining artillery and mortar units in indirect-fire LFXs offers tremendous benefits to all participants. Relatively simple scenarios can be written that require the synchronization, massing and detailed coordination of artillery and mortar fires. FDCs, FSEs and observers, in particular, gain much from such exercises. Additionally, this provides a superb opportunity to validate the communications of the entire fire support system.

Clearly, artillery battalion and firing battery commanders already have much to accomplish when they go to the field to conduct LFXs. Consequently, a modest approach might be to plan for an infantry battalion's mortars to conduct their own LFX training during the first five days of the direct support artillery battalion's

seven-day FTX. On the sixth day, planners can arrange a 24-hour artillery-mortar LFX and set aside the seventh day for the mortars to separately retrain to standard.

An infantry battalion commander also should consider deploying his TOC to the field to tie in with his FSE during any artillery-mortar LFX. This enables infantry leaders to experience firsthand fire support system command and control problems. Obviously, the infantry and artillery battalion commanders will have to develop an artillery-mortar LFX as part of their long-range training plans if they're to line up the necessary resources. Nevertheless, with the ranges, ammunition and time allocated, the exercises aren't difficult to structure and are clearly worth the investment.

The infantry battalion commander also should work with his FSO to have his mortar platoon leader, platoon sergeant, squad leaders and FDC members visit a firing battery from time to time. With apologies to Fort Benning, mortar tactics, techniques and procedures are simply not as refined as they are in the artillery. What may be second nature to an artilleryman is sometimes news to an infantry lieutenant whose formal education on the mortar system spans all of six weeks.

Here are some examples of what even relatively well-trained mortar platoons have learned by spending one day with a battery practicing displacement and occupation and conducting live-fire missions: methods of employing guides and gun color-coding systems to expedite occupation of firing positions; use of DA Form 4513 Record of Missions Fired; inputting all gun locations (not just the base piece) into the FDC computers; wire communication techniques; and the use of safety stakes for guns. Similarly, an FSO can do great service for his battalion's mortars by arranging for several artillery NCOs with gunnery and FDC

skills to spend time coaching their infantry counterparts in the field. If "ego containment drills" are exercised by the mortarmen during these exchanges, the results can be impressive.

Evaluating Strengths and Weaknesses

The infantry battalion commander must evaluate the strengths and weaknesses of his fire support BOS because of the implications his judgment has (or should have) for future training and, potentially, combat. The overall process of mission-essential task list (METL) assessment is well-articulated in *FM 25-100 Training the Force* and *FM 25-101 Battle Focused Training* and needs no further elaboration.

In developing his training assessment for fire support, the infantry battalion commander should direct the FSO to put his head together with the mortar platoon leader and review the battalion's fire support BOS in detail. Based on his discussions with and input from the mortar platoon leader and rifle company FSOs, the battalion FSO then should recommend fire support operating system assessments for each METL task.

What's important isn't so much the selection of the specific "T," "P" or "U" (trained, needs practice or untrained) task as is the process of scrutinizing the MTPs and T&EOs. The infantry-artillery team should have the professional dialogue that truly appraises proficiency and develops the subsequent training plan that zeroes in on what the infantry battalion commander and his FSO have deemed essential.



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A good FSO will look for opportunities to include his infantry battalion's mortars in artillery LFXs.

TA Warrant Officer Restructure Approved

On 25 November 1991, the Commandant of the US Army Field Artillery School (USAFAS), Fort Sill, Oklahoma, approved the restructure concept of the Target Acquisition Radar Technician (MOS 131A) into the Target Acquisition Technician. In July 1992, the change packet was submitted to the Department of the Army. The change was approved on 25 May 1993 after worldwide staffing to all major commands (all concurred). A phased implementation will begin in FY 95 and take four to six years.

The Target Acquisition Technician will be the Field Artillery specialist in radar operations and the targeting process. As a targeting officer, the warrant will be crucial to the inclusion of targeting in the command estimate process and the integration of fires to support the combined arms commander. The Target

Acquisition Technician will replace most captain and lieutenant counterfire officer positions and Field Artillery intelligence officer and targeting officer positions from the target acquisition battery through the corps artillery levels.

The redesign will improve upward career mobility for the warrant officer, restore a healthy promotion distribution, establish new warrant positions through the corps artillery level and bring the warrant career pattern in line with the Warrant Officer Leadership Development Action Plan (WOLDAP). Fielding the Target Acquisition Technician will be closely monitored by the Field Artillery Proponency Office, USAFAS, to ensure that high-priority units receive the newly trained warrants first, that a continental US/outside the continental US (CONUS/OCONUS) rotation pattern is

established and that new accessions match the capabilities of the training base.

A transition course will be conducted to train warrant officers who have not received training in targeting. This will require sending some warrants to the transition course TDY and return, filling other positions using senior course graduates or sending some warrants to the transition course TDY en route to their new duty stations.

Questions concerning implementation can be addressed by writing to the Commandant, USAFAS, ATTN: ATSF-AI-P, Fort Sill, OK 73503-5600 or by calling DCTN 639-6365/4970 or commercial (405) 351-6365/4970.

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ULLS S-4 and the Change-of-Command Inventory

What's the first opportunity a battery commander has to set standards and give his rater an impression of how he'll operate? The answer: change of primary hand-receipt holder inventory as defined in AR 710-2 *Supply Policy Below the Wholesale Level*—commonly referred to as the change-of-command inventory.

Two things are accomplished with this inventory. The outgoing commander gets his chance to prove he maintained 100 percent accountability of his property. The incoming commander gets to set his standards and, if the inventory is conducted properly, assess the readiness and morale of his new unit.

The inventory's effects, successful or not, are lasting. Any commander who fails to conduct a thorough inventory will pay for it either during the command with his time or at the end of the command with his wallet.

What can the Army do to assist a commander in property accountability? The answer: ULLS S-4 (unit-level logistics system S-4). It's a module that automates sub-hand receipts, shortage annexes and component hand-receipt functions for units operating with MS-DOS software. ULLS S-4 keeps track of all hand receipts, producing sub-hand receipts for the commander. ULLS-4 also

can produce a shortage annex, component listings, an imbalance report and a consolidated serial number list. All reports are at the fingertips of the commander on his battery computer. ULLS S-4 standardizes all sub-hand receipts and eliminates the need to prepare DA Form 2062 Hand Receipt/Annex Number.

The inventory planning and preparation phase is probably the most overlooked phase of the inventory because of the time-consuming auditing of the hand receipts—auditing DA Form 2062s can take seven to 10 days. Assuming that ULLS S-4 is accurate and property accountability is maintained, ULLS S-4 can turn the audit phase into a one- or two-day event.

The incoming commander gets the current hand-receipt printout from the property book officer (PBO), and he can compare it to the "Commander/Holder Summary Complete" printout from ULLS S-4 (see Figure 1, Page 38 for the information the ULLS S-4 provides). With this report, the commander/holder can see at a glance the quantity on hand for a particular line item number (LIN) assigned to each sub-hand receipt holder. The report informs the commander by message when quantity differences exist. The incoming commander

must ensure that all property, including office furniture and computer software, is signed for on a sub-hand receipt.

Once the incoming commander has "scrubbed" the hand receipt from the PBO and Commander/Holder Summary Complete, he can print a sub-hand receipt shortage annex. This report identifies component shortages, if any, on end items assigned to a particular sub-hand receipt. It's verified by the commander. The incoming commander can use the report later during the physical inventory to verify shortages.

Next the incoming commander can print a "Commander/Holder's Summary Imbalance" (see Figure 2, Page 38 for the information the ULLS S-4 provides). This report allows the commander/holder to review only the LINs that have quantity imbalances. The imbalance is between what's assigned to each sub-hand receipt holder and the total LIN recorded on the hand-receipt data file.

If the incoming commander is completely satisfied that everything on the PBO printout is sub-hand receipted, he can print out a current sub-hand receipt. If he isn't satisfied, he can make the appropriate adjustments to the sub-hand receipts, then he can print out the sub-hand receipts

and go forward with the 100 percent physical inventory. Shortening the audit phase gives the battery commander more time to conduct the 100 percent physical inventory, ensuring the equipment is accountable and serviceable.

COMMANDER/HOLDER SUMMARY
COMPLETE
ORGANIZATIONAL PROPERTY

UIC/DESC: WAQYD0/D CO. 2/34 INF BN.

PBIC	LIN	SUBLIN	STOCK NUMBER	GENERIC NOMENCLATURE NSN NOMENCLATURE	CI	AI	SIC SRRC	UI	AUTH QTY	O/H QTY	SUBHAND RECEIPT NO	QTY O/H
8	N04596			NIGHT-VISION SIGHT CREW-SERVED WEAPON: AN/TVS-5			U		15	14		
			5855-00-629-5327	NIGHT VISION AN/TVS-5			S	EA			02	15
				THE TOTAL SUBHAND RECEIPT QTY O/H IS MORE THAN THE HAND RECEIPT O/H QTY [RECONCILE DIFFERENCES]								TOTAL FOR LIN: 15
8	N04732			NIGHT VISION SIGHT INDIVIDUAL WEAPON: AN/PVS-4			U		14	2		
			5855-00-629-5334	NIGHT VISION AN/PVS-4			S	EA			02	2
												TOTAL FOR LIN: 2
8	R56742			REEL EQUIPMENT: CE-11			U		16	16		
			5805-00-407-7722	REEL EQUIPMENT: CE-11	01		N	EA			01	15
				THE TOTAL SUBHAND RECEIPT QTY O/H IS LESS THAN THE HAND RECEIPT O/H QTY [RECONCILE DIFFERENCES]								TOTAL FOR LIN: 15
8	R75709			REPAIR KIT, TENTAGE			U		1	1		
			8340-00-262-5767	REPAIR KIT, TENTAGE			N	EA			03	1
												TOTAL FOR LIN: 1
8	X40009			TRUCK CARGO: 2 1/2 TON 6X6 M35A2C			U		2	2		
		X40077	2320-00-926-0873	TRK CGO:2 1/2T M35A2C	01		S	EA			03	2
												TOTAL FOR LIN: 2

Legend:
 UIC = Unit Identification Code
 PBIC = Property Book Identification Code
 LIN = Line Item Number
 SUBLIN = Sub-Line Item Number
 NSN = National Stock Number
 CI = Component Indicator
 AI = Annex Indicator
 SIC = Support Indicator Code
 SRRC = Serial/Registration Number Requirement Code
 UI = Unit of Issue

Figure 1: The "Commander/Holder Summary Complete" printout from the ULLS S-4 gives information on the quantity hand-received and on-hand for each LIN, the sub-hand receipt holder and a message when there are quantity differences.

COMMANDER/HOLDER SUMMARY
IMBALANCES

UIC/DESC: WAQYD0/D CO. 2/34 INF BN.

PBIC	LIN	SUBLIN	STOCK NUMBER	GENERIC NOMENCLATURE NSN NOMENCLATURE	CI	AI	SIC SRRC	UI	AUTH QTY	O/H QTY	SUBHAND RECEIPT NO	QTY O/H
8	N04596			NIGHT-VISION SIGHT CREW-SERVED WEAPON: AN/TVS-5			U		15	14		
			5855-00-629-5327	NIGHT VISION AN/TVS-5			S	EA			02	15
				THE TOTAL SUBHAND RECEIPT QTY O/H IS MORE THAN THE HAND RECEIPT O/H QTY [RECONCILE DIFFERENCES]								TOTAL FOR LIN: 15
8	R56742			REEL EQUIPMENT: CE-11			U		16	16		
			5805-00-407-7722	REEL EQUIPMENT: CE-11	01		N	EA			01	15
				THE TOTAL SUBHAND RECEIPT QTY O/H IS LESS THAN THE HAND RECEIPT O/H QTY [RECONCILE DIFFERENCES]								TOTAL FOR LIN: 15

Figure 2: This "Commander/Holder Summary Imbalances" is a printout of only the LINs that have quantity imbalances.

The first impression a new commander makes can be a lasting one. A new commander should take his change-of-command inventory seriously. It will ensure he establishes effective controls on property accountability and will assist him in maintaining property accountability throughout his command.

Units can order the software at no cost by writing the ULLS S-4 Team at

Commander, US Army Combined Arms Support Command and Fort Lee, ATTN: ATCL-SSB (CA0), Fort Lee, Virginia 23801-6000. If ordering ULLS S-4 for a number of units, please include the name and complete address of each unit to receive the software in the request letter. Units also can order the software by calling the ULLS S-4 Team at DSN 687-0723/0711 or commercial (804)

734-0723/0711. The ULLS S-4 comes on four floppy disks, either 3.5- or 5.25-inch sizes for MS-DOS, Version 5.0 or lower.

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What is the Most Accurate Gunnery Solution for Lightfighters?

Recently, the Gunnery Department of the Field Artillery School, Fort Sill, Oklahoma, has received many questions from Lightfighters concerning the most accurate source for computing data for the M102 and M119 howitzers in both the automated and manual environments. The questions aren't surprising, considering the large number of current tabular firing tables (TFTs), backup computer system (BUCS) versions and the changing battery computer system (BCS) software. The problem is further complicated because the updates in TFTs, BUCS and BCSs have rarely coincided. In other words, the most current manual TFT data may not be programmed into the BCS or BUCS. Additionally, the BCS and BUCS in the same fire direction center (FDC) may contain different fire control information (FCI). This isn't an insurmountable problem, and a fire direction officer (FDO) with the correct knowledge can use all three avenues to determine the correct data in an easy manner.

This article addresses what's contained in each TFT, BUCS and BCS version and the correct procedures to use, depending on the type of weapon system.

The first step is to understand that FCI in any TFT is continuously updated as improved aerodynamic solutions are used, as errors in older data are discovered and as newer weapon systems (M119) necessitate changes. TFTs may have tens of changes, and FDOs must know which change or TFT supersedes all others. These updates are sent to the Field Artillery School. The Gunnery Department (Concepts and Procedures Branch) then issues these changes to the units (see the article "Firing Table, GFT and GST Update" in this "View from the Blockhouse" section).

History. The TFTs for Lightfighters began with the FT 105-AS-1, dated 29 November 1963, and FT 105-AS-1, dated

30 June 1966. This set of FCI was based on the M108 howitzer (M103 cannon)—a light, self-propelled howitzer. FT 105-AS-2, dated 15 November 1967, superseded all AS-1 FCI.

AS-2 data also was based on the M108 howitzer (M103 cannon). FT 105-AS-2 underwent many changes, ending with Change 11 in April 1987. AS-2 became the primary source of data for the M102 howitzer (M137, M137A1 (E1) cannon) acquired by the Army in 1965-66.

FT 105-AS-2, Change 11, was produced and distributed to field units to support M119 fielding. Change 11 provided additional corrections to compensate for differences in standard (also known as reference) muzzle velocity (MV) and air density (drag) for the M119 howitzer (L20A1 cannon). This allowed Lightfighters with either the M102 or M119 howitzer to determine the most accurate gunnery solution.

Through further test firing, the Ballistics Research Laboratory (BRL) produced and distributed FT 105-AS-3 in December 1989. BRL tested the M108 howitzer (M103 cannon), M102 howitzer (M137 series cannon) and M119 (L20A1 cannon) to determine the data. There are no changes for differences between cannon tubes or weapon systems. Information found in the AS-3 applies to both the M119 and M102 howitzer systems. The AS-3 supersedes FT 105-AS-2, including all changes.

The biggest concern from units has been MVs. The MV plots from all data correlated to date does not show a significant difference in achieved MVs between the two systems. The M119 (L20A1 cannon) performs at a slightly higher MV for any given charge; however, this difference is said to be negligible until more data can be tabulated. If further test firing exhibits a significant difference between the two systems,

additions will be made to the introduction portion of the AS-4 TFT final ("brown cover") version.

BRL and the Gunnery Department discovered problems with FT 105-AS-3 for high-angle drift corrections. BRL improved the data and produced FT 105-AS-3, Change 1, dated 20 November 1992, which was distributed to units in January 1993. The *only change* in data between AS-3 and AS-3, Change 1, is the data in Table F for high-angle fire, primarily high-angle drift corrections.

Currently, BRL is using new aerodynamics solutions to rework all data from FT 105-AS-3 and FT 105-AS-3, Change 1. This updated FCI will be published in approximately one year as a brown-cover AS-4 FT. This brown-cover version will supersede all previous FT 105-AS-3 FCI, including all changes.

With the knowledge of the history of the FCI, the next dilemma is understanding which set of TFT data is programmed into which version of the BUCS or BCS. BUCS Revision 0 contains no specific MV data for the M119 howitzer. The program data is from FT 105-AS-2. BUCS Revision 1 includes FT 105-AS-2, Change 11 data. All units (M102/M119) that have BUCS Revision 1 should be using this version of software. As noted with the TFTs, the information contained in AS-3 (which is in neither Revision 0 nor 1) is a much more accurate representation of the capabilities of both the M102 and M119 when compared with data from FT 105-AS-2, Change 11, especially with reference or standard MVs.

The difference in programmed data is also evident with the BCS. BCS Version 9 includes FT 105-AS-2, Change 11 data (same as BUCS Revision 1). Version 10 BCS will include AS-3, Change 1, to ensure that updated high-angle drift corrections are included. Figure 1 (Page 40) shows the date of the FCI and which automated program includes that FCI.

Problem. The major source of confusion for units is how to determine the most accurate muzzle velocity variations (MVVs) because of the many FCI's programmed at different times into different automated systems. For example, a M119 unit calibrates a howitzer with Charge 4, HE (high-explosive round). The FDO determines the calibrated MV to be 278.0 meters per second, or m/s. (See *ST 6-40-16 Operation of the M90 Chronograph and Muzzle Velocity Management* for further explanation of terminology and theory). Each computational source determines a different MVV based on its standard MV stored in the program (see Figure 2). Which MVV is correct?

Solution. None of the determined MVVs for each program are "wrong." The computational source (Manual Muzzle Velocity Correction Tables (MVCT), BCS; MVD or BUCS MVV file) will compare the calibrated MV actually fired by a weapon to the standard MV that's stored in its own program and determine an accurate MVV. (Note: MVCTs have been updated to reflect AS-3 data. MVCT, Change 3, dated August 1992, should be used to determine manual MVVs with the M102 and M119 howitzers. In approximately one year, an updated version of the MVCT will be issued to units.) Based on its own MVV, the computational source will determine accurate data. If a unit is unable to calibrate, historical or predicted MVs can be used. The computational source will determine its own MVV in the same manner. Note: MVVs *cannot* be

TFT	Date of TFT	BCS	BUCS
FT 105-AS-2	November 1967	N/A	Revision 0
FT 105-AS-2, Change 11	April 1987	Version 9*	Revision 1*
FT 105-AS-3	December 1989	N/A	N/A
FT 105-AS-3, Change 1	November 1992	Version 10	N/A
FT 105-AS-4	January 1994	N/A	N/A

* The standard MVs will differ by 0.1 to 0.3 between the *ST 6-40-2 BCS Job Aids* and *ST 6-40-31 BUCS Revision 1 Job Aids*. The difference between these otherwise similar versions is due to expression. BRL expressed BCS Version 9 standard MVs to the nearest one meter per second. BUCS Version 1 standard MVs were expressed to the nearest 0.1 meters per second.

Figure 1: This chart shows the date of the FCI and which automated program includes that FCI.

Charge 4	BUCS Revision 0	BUCS Revision 1	BCS Version 9	BCS Version 10
Standard MV	277.9	282.3	282.0	279.0
Calibrated MV	278.0	278.0	278.0	278.0
MVV	+0.1	-4.3	-4.0	-1.0

Figure 2: Each computational source determines a different MVV based on its standard MV stored in the program.

transferred across computational sources (e.g., input BUCS Revision 0 MVV into BUCS Revision 1). Calibrated, historical or predicted MVs *can* be transferred across computational sources. FDOs must record calibrated MVs in their MV record book.

FDOs shouldn't be intimidated by the various FCI contained in the BCS, BUCS and TFTs. They should understand the reasons for different solutions and which is preferred. There's no reason to change current MV management procedures. The

information in this article is to provide just such clarification.

If units have questions about information in this article, they can call the Officer Instruction Branch of the Gunnery Department at DCTN 639-2622/4973 or commercial (405) 351-2622/4973.

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Firing Table, GFT and GST Update

What firing table (FT) do you use to compute safety for the M483A1? What is the NSN for the backup computer system (BUCS) M119 chip? My unit needs some graphical firing tables (GFTs), how can I get them? From the Gunnery Department of the Field Artillery School, "Information Note #1: Status of Firing Tables, GFTs and GSTs [graphical scales tables]," dated 17 January 1993, has the answers to these questions and much more. But because of lack of funds, we can no longer produce "Information Note #1" in the quantities we'd like to.

The charts in this article were taken from the January "Note" and are to give Field Artillery units the most current firing tables, both graphical and tabulated.

Current Cannon Firing Tables		
Firing Table	Projectile	Remarks
105-mm M101A1		
FT 105-H-7 w/C1, 3, 4, 5 & 6	Ctg, HE, M1	HE
FT 105-ADD-B-2 w/C-1	Ctg, HE, M444	ICM
*FT 105-AV-1 w/C-1	Ctg, HE, M548	RAP
*FT 105-H-6 (PROV SUPP 1)	Ctg, CS, M629	CS
105-mm M102/M119		
*FT 105-AS-3 w/C-1	Ctg, HE, M1/M760	HE
FT 105-ADD-F-1 w/C-1	Ctg, HE, M444	ICM
*FT 105-AU-1 w/C-1, 2	Ctg, HE, M548	RAP
*FT 105-AS-2 (PROV SUPP 1)	Ctg, CS, M629	CS
*FT 105-AW-0	Ctg, HERA, M913	RAP

Current Cannon Firing Tables Continued

They also have the latest information on BUCS chips.

New or replacement items may be obtained as follows:

- **Tabular Firing Tables.** You order these through AG publication channels using DA Form 17.

- **Graphical Firing Tables.** You requisition these through your supply section. Requisition them as expendable items, and cite CTA 50-970 as the requisitioning authority.

- **Provisional Firing Tables.** These tables are marked with an * in front of the FT and have PAD or (PROV) following the listing. You can't get these and other other provisional data through normal channels. To order them, send a letter justifying your needs to the following address or call DSN 298-3577/3880: Commander, US Army ARDEC, ATTN: SMCAR-FSF-T, Aberdeen Proving Ground, MD 21005-5001.

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Firing Table	Projectile	Remarks
155-mm M109/M114A2		
FT 155-AH-3 w/C-2, 3, 4, 6, 7	HE, M107	HE
FT 155-ADD-E-2 w/C-1	HE, M449A1	ICM
	HE, M449 (T379)	ICM
	HE, M449E1	ICM
FT 155-AL-1	HE, M549/M549A1	RAP
FT 155-AK-2 w/C-1	HE, M483A1	DPICM
FT 155-ADD-G-2	HE, M483A1	DPICM
FT 155-ADD-M-1	HE, M692/M731	FASCAM/ADAM
FT 155-ADD-P-1	HE, M718A1/M741A1	FASCAM/RAAM
*FT 155-ADD-S-0 (to AK-2)	SMK, M825/M825A1	SMOKE
155-mm M109A2/A3 & M198		
FT 155-AM-2 w/C-1, 2	HE, M107	HE
*FT 155-ADD-T-0 (to AM-2) w/C-1	SMK, M825/M825A1	SMOKE
*FT 155-AR-0 (PROV)	HE, M795	HE (LONG)
*FT 155-ADD-O-0 (to AR-O) w/C-1, 2	HE, M483A1	DPICM
*FT 155-ADD-I-2	HE, M449A1 (M449E2)	ICM
	HE, M449 (T379)	ICM
	HE, M449E1	ICM
FT 155-AN-1 w/C-1, 4, 5, 6	HE, M483A1	DPICM
*FT 155-AN-2	HE, M483A1	DPICM
FT 155-ADD-J-1 *w/C-3	HE, M483A1	DPICM
FT 155-ADD-L-1 w/C-1, 2	HE, M692/M731	FASCAM/ADAM
FT 155-ADD-N-1 w/C-1	HE, M718A1/741A1	FASCAM/RAAM
*FT 155-AO-0 w/C-1, 2	HE, M549A1/M549	RAP
*FT 155-ADD-K-1 w/C-1	CAS M687	BINARY, GB2
FT 155-AS-1	HE, M712	CPHD
FT 155-ADD-R-1	HE, M483A1	DPICM
*FT 155-ADD-Q-0 (REV) w/C-1, 2	SMK, M825/M825A1	SMOKE
*FT 155-AU-PAD w/C-1	HE, M864	DPICM, BASE BURN
*FT 155-ADD-U-PAD	HE, M864	DPICM, BASE BURN
*FT 155-ADD-V-PAD (to AN-2)	AD/EXJAM, XM867	
M109A5/M109A6		
See the article "Computing Firing Data for the M109A5 and M109A6" on Page 40 of the April 1993 <i>Field Artillery</i> .		
203-mm M110A2		
FT 8-Q-1 w/C-1, 3, 4, 6, 7	HE, M106	HE
FT 8-ADD-F-1 w/C-1	HE, M404	ICM
FT 8-T-1 w/C-1	HE, M509A1	DPICM
FT 8-ADD-G-1	HE, M509A1	
FT 8-ADD-L-1 (8-Q-1)	HE, M509A1	
FT 8-S-1 w/C-1	HE, M650	RAP
14.5-mm Trainer		
FT 14.5-A-1	Ctgs, M181, M182, M183	

Current Graphical Firing Scales

Based on TFT	Description	NSN	No. Rules	Charges
105-mm M101A1				
105-H-7	GFT HEM1 (LA) w/ICM	1220-01-038-0761	3	1-3, 4-5, 6-7
105-H-7	GFT HEM1 (HA)	1220-00-151-4155	1	ALL
105-H-7	GFT ILL M314	1220-01-021-7275	2	3-4, 5-7
105-H-6	GST HEM1	1220-00-815-6190	1	ALL
105-H-7	BAL SCALE HEM1 (LA)	1220-01-037-7284	1	1-3, 4-5, 6-7

Current Graphical Firing Scales (Continued)

Based on TFT	Description	NSN	No. Rules	Charges
105-mm M102/M119				
105-AS-3	GFT HEM1 (LA) w/ICM	1220-01-315-7912	4	1 thru 7
105-AS-3	GFT HEM1 (HA)	1220-01-315-7913	1	1 thru 7
105-AS-3	GFT ILL M314	1220-01-315-7917	4	1 thru 7
105-AS-3	GST HEM1	1220-01-315-7915	1	1 thru 7
105-AS-2	BAL SCALE HEM1 (LA)	1220-01-037-7285	1	1-3, 4-5, 6-7
105-AS-3	GFT HEM760 (HA & LA)	1220-01-315-7914	1	8 ONLY
105-AS-3	GST HEM760	1220-01-315-7916	1	8 ONLY
155-mm M109/M114A2				
155-AH-3	GFT HEM107 (LA) w/ICM	1220-01-038-2413	3	1-3, 4-5, 6-7
155-AH-3	GFT HEM107 (HA)	1220-00-551-3042	1	ALL
155-AH-3	GFT ILL M485	1220-01-038-7199	2	1-3, 5-7
155-AH-3	GST HEM107	1220-00-551-3041	1	ALL
155-AH-3	BAL SCALE HEM107 (LA)	1220-01-037-7287	1	1-3, 4-5, 6-7
155-AK-2	GFT HEM483A1 (LA)	1220-01-038-7204	3	1-3, 4-5, 6-7
155-AK-2	GFT HEM483A1 (HA)	1220-01-038-7203	1	ALL
155-AK-2	GST HEM483A1	1220-01-038-7202	1	ALL
155-AL-1	GFT HEM549A1 (LA)	1220-01-065-9844	1	7R (RKT ON)
155-AL-1	GFT HEM549A1 (HA)	1220-01-065-9843	1	7R (RKT ON)
155-AL-1	GST HEM549A1	1220-01-065-9842	1	7R (RKT ON)
155-mm M109A2/A3/A4 & M198				
155-AM-2	GFT HEM107 (LA) w/ICM	1220-01-215-3929	4	2-4, 3, 5-6, 7-8
155-AM-2	GFT HEM107 (HA)	1220-01-215-3961	1	ALL
155-AM-2	GFT ILL M485	1220-01-215-3962	2	2-3, 5-7
155-AM-2	GST HEM107	1220-01-215-3930	1	ALL
155-AM-2	GFT HEM107/M825	1220-01-224-2513	3	3-4, 5-6, 7-8
155-AM-1	BAL SCALE HEM107	1220-01-037-7288	1	3-4, 5-6, 7-8
155-AN-1	GFT HEM483A1 (LA)	1220-01-039-7272	3	3-4, 5-6, 7-8
155-AN-1	GFT HEM483A1 (HA)	1220-01-038-7201	1	ALL
155-AN-1	GST HEM483A1	1220-01-038-7200	1	ALL
155-AN-1	GFT HEM483A1/M825	1220-01-224-2513	3	3-4, 5-6, 7-8
155-ADD-Q-0	GFT HEM483A1/M825	1220-01-224-2514	1	8R
155-ADD-Q-0	GST HEM483A1/M825	1220-01-224-2515	1	8R
155-AO-0	GFT HEM549A1 (LA)	1220-01-065-9845	2	7R, 8R (M119A1), 8R (M203)
155-AO-0	GFT HEM549A1 (HA)	1220-01-065-9847	1	7R, 8R (M119A1), 8R (M203)
155-AO-0	GST HEM549A1	1220-01-065-9848	1	7R, 8R (M119A1)
155-AU-PAD	GFT HEM864 (LA)	1220-01-333-4120	1	7W, 7R
155-AU-PAD	GFT HEM864 (LA)	1220-01-333-4121	1	8 (M203)
155-AU-PAD	GST HEM864 (LA)	1220-01-333-4122	1	ALL
155-AS-0	GFT M712 (LA)	1220-01-102-7851	3	4-5G, 4-5W, 6-7W BAL
155-AS-0	GFT M712 (LA)	1220-01-102-7850	1	8 BAL
155-AS-0	GST M712	1220-01-102-7849	1	ALL w/1 extra slide
155-AS-0	GFT M712 (HA)	1220-01-116-3268	1	ALL
155-AS-1	CLGP M712 CPHD	1220-01-224-2588	1	
	FOOTPRINT TEMPLATE			
M203-mm M110A2				
8-Q-1	GFT HEM106 (LA) w/ICM	1220-01-038-2410	5	1-2, 3-4, 5-6, 7-8, 9
8-Q-1	GFT HEM106 (HA)	1220-01-021-7273	1	ALL
8-Q-1	GST HEM106	1220-01-021-7274	1	ALL
8-Q-1	BAL SCALE HEM106	1220-01-102-4202	1	1-3, 4-5, 6-7
8-T-1	GFT HEM509 DPICM (LA)	1220-01-067-7169	5	1-2, 3-4, 5G-5W, 6-7, 8-9
8-T-1	GFT HEM509 DPICM (HA)	1220-01-067-7170	1	ALL
8-T-1	GST	1220-01-067-7171	1	ALL
8-S-1	GFT HEM650 (LA) w/M753	1220-01-070-8970	7	1-2, 3-4, 5G-5W, 6-7, 8-9, 7R, 8R,
8-S-1	GFT HEM650 (HA)	1220-01-067-7172	2	9R
8-S-1	GST HEM650	1220-01-067-7173	1	ALL
				ALL w/1 extra slide
14.5-mm Trainer				
14.5-A-1	GFT	1220-00-442-2446	1	
14.5-A-1	GST	1220-00-221-6328	1	
14.5-A-1	BALLISTIC SCALE	1220-01-038-1226	1	

Backup Computer System

Item	NSN	Price
Cannon Revision 0 ROM Sets:		
M109A2/A3/198	5962-01-199-8709	
M110A2	5962-01-199-8714	
M102	5962-01-199-8710	
M114A1	5962-01-199-8715	
M101A1	5962-01-199-8711	
M114A2	5962-01-199-8716	
Survey	5962-01-199-8713	
Cannon Revision 1 ROM Sets:		
M109/M198 w/CPHD REV 1	5962-01-273-9479	\$424.00
Survey REV 1	5962-01-273-9480	114.00
M110A2 REV 1	5962-01-273-9481	211.00
M119/M102 REV 1	5962-01-273-9482	338.00
M101A1 REV 1	5962-01-273-9483	445.00
Datum-to-Datum Coordination Transformation (DDCT)	5962-01-299-4170	72.11
Reserve Component/Modified Armament System (RC/MAS) (M109A5)**	5962-01-299-4171	666.00

***Units being converted to the M109A5 will be issued BUCS chips as they are fielded.*

The Fires Paragraph—What is It?

The "Fires" paragraph is a part of every operations order (OPORD). Found in Paragraph 3 after the "Scheme of Maneuver," the Fires paragraph is written by the fire support coordinator (FSCoord) or his representative, usually the fire support officer (FSO). It reflects the "scheme of fires" derived during the planning process using the maneuver commander's guidance for fire support and is refined during course of action (COA) development and war-gaming.

There's considerable debate about what should be included in the Fires paragraph. The problem stems from a lack of specific guidance and good examples in our current FM 6-20 series of manuals. The Combined Arms Center (CAC) at Fort Leavenworth, Kansas, is updating *FM 101-5 Staff Organization and Operations*, which is the capstone manual for the OPORD. FM 101-5 (draft), dated July 1992, provides the best definition for the contents of the Fires paragraph:

"Clarify 'scheme of fires' to support the overall concept. Designate which maneuver unit has priority of fires (by stating 'main effort'); priority use of low-density munitions; priority as to type of fires for general support (GS) units (for instance, close support, interdiction, counterfires and so forth); preparatory fires (time and duration, as appropriate) and use of nuclear and chemical fires. Establish priority of Air Force support. Refer to appropriate annexes as required. If the fire

support annex is the only annex you reference, show it after '3.a.(2) Fires.' When referencing other annexes, identify them within the subparagraph where appropriate."

Field Artillery Officer Advanced Course and Command and General Staff Course students learn the Fires paragraph using a memory aid that consists of five elements: scheme/purpose, priority, allocation and restrictions/special munitions—SPPAR. These elements have evolved over time with input from instructors, observer/controllers at the Combat Training Centers and units in the field. Also factored in were updates in key manuals and changes in doctrinal terminology (intent, scheme and guidance—among others).

Why write the Fires paragraph? Some key players on the combined arms team never read anything pertaining to fire support beyond the Fires paragraph. They selectively ignore the fire support annex and fire support execution matrix. The Fires paragraph serves as a scheme or concept for those who fail to read beyond the basic OPORD.

Keeping the paragraph as brief as possible while ensuring all essential information is included is key. Use of SPPAR allows this and also serves as a means of standardizing the contents of the Fires paragraph. Briefly summarized, the elements of SPPAR are:

Scheme/Purpose. What does the

commander want to accomplish with his fires? It is not a generic purpose statement but a bottom-line-up-front statement that reflects the scheme or purpose of fire support for the selected scheme of maneuver. Examples might be, "The purpose of fires is to..." or "Fires will be used to..." The scheme factors in *all* fire support assets.

This is arguably the most important part of the Fires paragraph. The FSCoord must articulate how fire support as a battlefield operating system (BOS) will be synchronized with other BOSs.

Priority. Who has priority of fires? When, where and why do they have it? When do priorities shift? Include all systems when assigning priority of fires. Cover all phases of the operation, which should mirror the scheme of maneuver phases.

Allocation. Fire support resources are a precious commodity and must be carefully allocated based on the scheme of maneuver. The FSO must actively participate in the decision-making and maneuver-planning process and understand the selected COA to allocate his resources where they're needed most. There are never enough resources, so the FSO must ensure he has adequate support at the critical time and place on the battlefield.

Restrictions (Special Munitions). To retain control of certain munitions and assets or to protect friendly forces or non-combatants, a commander or FSO may establish restrictions. This may include statements such as, "Use of illumination requires brigade approval" or "All built-up areas are no-fire areas." Dissemination of restrictions is critical. Restrictions frequently pertain to special munitions based on quantity and effects.

The Fires paragraph is the essence of the fire support plan. It must accurately capture the scheme of fires. The Field Artillery School will incorporate SPPAR in the next version of the FM 6-20 series of manuals.

If you have questions or comments, call the Fire Support Division at DCTN 639-4809/6889 or commercial (405) 351-4809/6889 or write Commandant, US Army Field Artillery School, ATTN: ATSFTFA, Fire Support and Combined Arms Operations Department, Fort Sill, Oklahoma 73503-5600.

MAJ James M. Waring, FA
OAC Small Group Leader, FSCAOD
FA School, Fort Sill, OK



Reflections on the Storm FA Vector for the Future

by Lieutenant Colonel M. Thomas Davis

Following the triumphant conclusion of the Gulf War in 1991, many articles appeared on the pages of this journal and others about the role and contributions of Field Artillery during the conduct of the desert campaign. Because the majority of these observations and recollections were written shortly after the conclusion of the conflict, they reflected the warm glow of victory and the satisfaction that flows from a job well done.

Certainly the success of our doctrine, fire support system and magnificent soldiers were well worth noting. But we must not allow applause to distract us from serious issues that must be faced in the near future. Despite our great success, Desert Storm left us with many questions about the current force and our vector for the future that demand serious consideration.

My purpose in this article, armed with the objectivity that comes with time and distance from a significant event, is to identify from the perspective of an artillery direct support (DS) battalion commander areas in which we should invest additional thought, training and resources. Some of these areas require solutions that are quite marginal, some evolutionary and some, perhaps, revolutionary.

The selected observations presented fall into the three broad categories of doctrine, equipment and organization.

Doctrine

As stated by many senior commanders, the performance of the AirLand team in the desert demonstrated the enormous value of the efforts focused on organizational and doctrinal analysis after the

Vietnam War. Nonetheless, in the arenas of fire support and artillery employment, certain elements of our doctrine, as reflected in tactics, techniques and procedures (TTPs), merit reflection and review.

Offensive Focus. We need to more thoroughly focus our thought, doctrinal publications and, most importantly, TTPs on offensive concepts. Although the past 10 years, especially since the publication of the 1982 version of *FM 100-5 Operations*, have witnessed renewed emphasis on the offensive and the advantages of initiative, agility and the concentration of power that comes with it, more needs to be done in many aspects of fire support.

For example, in the heavy force artillery, we invest considerable effort practicing and perfecting advance party operations. To accomplish this, we normally task an inappropriate vehicle from a section having another intended function, gather the soldiers from the various crews and launch them into the distance with the battery commander leading in a soft-skinned vehicle. The advance party goes to an assigned location or area, makes a brief security sweep with limited force and equipment and then prepares the position for the arrival of the main body with the howitzers.

Inherently this is a technique best suited for a defensive scenario where the area being prepared can be reasonably coordinated with the maneuver force and where the advance party can operate at acceptable risk close behind the forward line of

own troops (FLOT). But under offensive conditions such as those of Desert Storm, there's little possibility for employing an advance party and an even smaller likelihood that its movements can be coordinated with the maneuver commander or his staff. In addition, with the vehicular and organizational density immediately behind the front lines, it's very difficult to establish a discreet position among the combat vehicles and trains of the supported force.

Furthermore, being forced to ride in high-mobility multipurpose wheeled vehicles (HMMWVs) and other soft-skinned vehicles, neither the battery commander nor his platoon sergeants have appropriate transport for operations near the FLOT.

In the offensive, especially a movement-to-contact of a large force, batteries must move in a formation conducive to immediate emplacement for firing or, if the terrain is more restrictive as it would have been in Europe, use the hasty occupation as the normal occupation tactic. The traditional advance party approach, which may be on the way out for other reasons as we field the Paladin (M109A6), should be more the exception than the rule.

Other elements of offensive operations should be more thoroughly considered in our tactical concepts and training programs. One element is the procedures for clearing fires.

In the movement of VII Corps to Objective Collins, the corps was screened to the front by the 2d Armored Cavalry Regiment (2d ACR) supported by the 210th Field Artillery Brigade. There's little published guidance on who clears fires in that area between the rear of a screening

force on the move, such as the 2d ACR in this example, and the front of the main force being screened.

This void became a constant concern in the desert as the location and posture of the 2d ACR's Regimental Support Squadron (RSS) was not precisely known to the lead elements of the main force at any given time. Obviously, this problem was most intensely felt at night and during periods of limited visibility, leaving those in the main force reluctant to engage targets to the front because of concerns about possible fratricide.

In the absence of other guidance, we employed a variation of the air defense conditions of "Free, Tight and Hold." While we knew the 2d ACR was to our immediate front, all scouts and fire support teams (FISTs) were placed in weapons "Hold"—not to engage targets unless they were receiving fire or could positively identify the target as hostile. Once the ACR slipped to our right, we changed the condition to weapons "Tight"—engage targets unless they could be identified positively as friendly.

Army Aviation. We need a more thorough understanding of the nature of the mission being performed by Army attack helicopters. Attack helicopter commanders argue that they operate in the "ground environment" and that assigning an attack company, or battalion if available, to reinforce a committed maneuver unit is no different than cross-attaching a tank company. Conceptually, this may be correct; practically, it is not.

A tank company cross-attached to another battalion or brigade arrives with the understanding it will operate with its

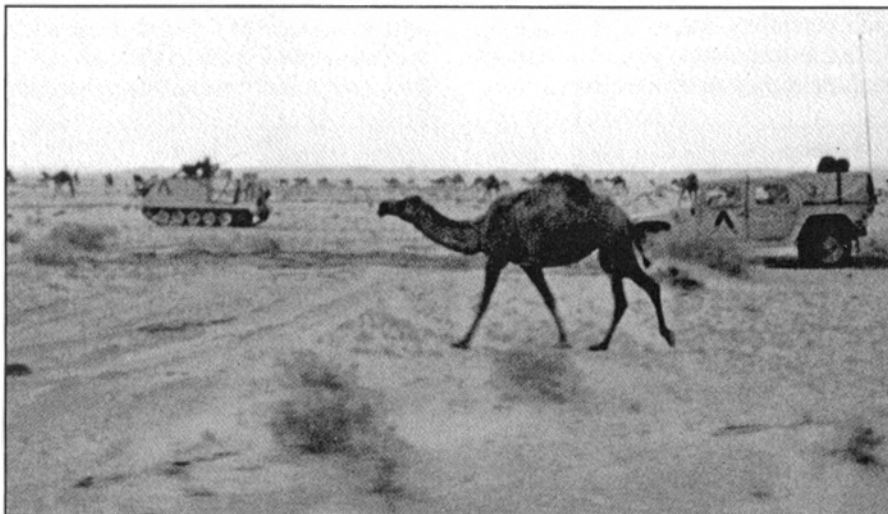
new command for some time. It comes with certain logistical assets, or arrangements are made to provide support from the forward support unit of its new organization. The commander of the tank unit reports to his new headquarters and coordinates the mission, the scheme of maneuver, communications and resupply. Once all of this coordination is complete, he takes his unit to its designated position.

With a helicopter company, conditions are very different. The aircraft appear—usually on short notice—and coordination is literally "on the fly." The situation, mission, scheme of maneuver, fire support plan and appropriate control measures will likely be explained over the radio, leaving the commander of the attack unit to quickly determine how he can best support the operation as he understands it. Once he has expended his ordnance, consumed his fuel or been ordered to another location, he departs.

The punch line is this: Unless they're assigned a distinct zone or sector in which to operate, Army attack helicopters look considerably more like additional fire support than maneuver assets. Because there's no Army Aviation element within the maneuver brigade tactical operations center (TOC), the aircraft usually are controlled and coordinated by either the brigade commander or his operations officer. At some point, in order to synchronize the employment of the aircraft, Army air assets must be coordinated with other fire support assets by the fire support coordinator (FSCOORD) or the brigade fire support officer (FSO). But when and by whom?

Doctrinally, we should consider Army attack helicopters as fire support assets when working in support of a committed maneuver brigade. Their fires should be coordinated by the FSCOORD and planned by the brigade fire support element (FSE). The brigade FSE should be where attack helicopters report in when they arrive in an area of operations and where they check out when they depart.

An alternative to this arrangement, one advocated by some members of the Aviation community, would be to take the attack helicopter commander out of the cockpit and put him on the ground with the supported maneuver commander. This would make him less like a "maneuver" commander and more like a FSCOORD and certainly not a "fighter." Essentially, when assigned a mission of reinforcing a maneuver element, the helicopter commander would come to the supported unit TOC or tactical command post (TAC) by



How Btry, 2d Sqdn, 3d ACR in Desert Storm. There's little published guidance on who clears fires between the rear of a screening force and the front of the main force being screened.

either air or ground with appropriate communications equipment, coordinate the integration and synchronization of his assets and depart when the mission is complete.

There are many arguments, from the practical to the emotional, recommending either of these solutions and several more. But we must further review and refine the process by which we employ Army air on the battlefield and control its fires when it arrives.

Artillery 4x6. An early victim of the desert war was the 3x8 concept of employing batteries in distinct platoons. In my battalion and most others, we quickly returned to the battery concept for several reasons: it better facilitates mass fires, simplifies command and control, reduces the not inconsiderable problem of coordinating positions in the brigade zone/sector, eases logistical support requirements, enhances local security and was feasible, given the minimal counterfire threat. We should seriously consider, even with the fielding of the Paladin, moving away from the platoon-oriented 3x8 concept toward a battery-oriented 4x6 structure.

Unlike maneuver formations that fight at the company level, the Field Artillery battalion fights as a battalion. The mission of direct support, for example, is assigned to a battalion, not to its individual batteries and certainly not to its platoons. To successfully accomplish this mission, the battalion must be able to quickly and effectively mass its fires.

Although the Battle Command Training Program (BCTP) indicates we are increasingly skillful in planning massed fires, results from the National Training Center (NTC), Fort Irwin, California, suggest we are having considerably less success in actually executing them. At one point, the NTC was counting two or more platoons firing on a target as "massed fires." We should not allow ourselves to be deceived into viewing massed fires as anything less than massing a battalion—or better yet, several battalions. As a division commander once commented to me after a major live-fire exercise, "Nothing on the battlefield is as *underwhelming* as a battery one."

By fighting in six-platoon elements, the chances of massing all the battalion's howitzers on a target are greatly reduced. We must address what appears to be a basic inconsistency in our current operational concept: successfully

accomplishing our mission requires that we fully integrate the fires of a battalion; but, our operational technique *disintegrates* our fundamental organization—the firing battery. This trend only will become more pronounced if we begin employing Paladins in two-gun "fire teams," no matter what the technological capabilities of the weapon.

Coordinating the movements of three or four batteries, each containing firing elements with adequate logistics and support for combat resupply and local defense, is a far simpler task for battalion commanders and battalion S3s than trying to stay current on the status of six elements—some with trains and some without, some with specialized munitions and some without, some on the move and some stationary. If we believe our primary business is massing fires, and I believe we do, then tactics and procedures that inhibit our ability to perform this most fundamental function must be seriously questioned.

There's another major consideration for focusing operations at the battery level. The area behind a maneuver brigade's leading elements is remarkably crowded. Even in the unrestricted terrain of the open desert, we were astounded by the heavy density of personnel and vehicles immediately to the rear of the brigade FLOT. In this area, one finds many small sections and organizations from the signal battalion's mobile subscriber equipment (MSE) nodes, to the engineers' heavy earthmovers, to the intelligence battalion's collectors and jammers—all eagerly seeking a location to emplace their equipment and all too frequently failing to coordinate their movements with the maneuver commander or S3.

Maneuver battalion commanders are responsible for keeping an inherently disorderly place somewhat organized and controlled. The simple act of coordinating positions for six firing elements, plus a headquarters, plus trains, plus the multiple-launch rocket system (MLRS) battery (should one be attached) is a heavy burden for the DS battalion commander and operations officer. Anything that simplifies this process is helpful.

Many in the maneuver community are uncomfortable with the terrain management problems that result from the 3x8 concept. They clearly will be less comfortable with the challenge inherent in a Paladin doctrine that *looks* like 2x12 or 1x24.

That said, we must retain the expanded firepower offered by 24 howitzers. There are significant operational gains and no documented lethality losses to be realized in restructuring ourselves from 3x8 to 4x6. This will involve certain personnel gains and losses, but it addresses the significant problems already mentioned, facilitates massing fires and provides the DS battalion commander an additional method of weighting the fight through the positioning of his fourth battery. In addition, it simplifies all dimensions of the logistical issue because it becomes easier to refuel, rearm and recover vehicles.

Equipment

In comparison to the other combat arms, investment in fire support during the past decade has been relatively modest. As might be expected, the effects of this investment lag were quite visible during the desert campaign. While the maneuver forces employed newer, modernized systems, the artillery went to war armed



The FA should consider moving away from the 3x8 to the 4x6 structure—even with the fielding of Paladin (shown here with its ammo resupply vehicle).



4th Battalion, 82d Field Artillery in a Sand Storm during Desert Storm. We didn't engage the enemy at near maximum range because we do not have the target acquisition systems to provide real-time input at the brigade and division levels.

predominantly with the M109 howitzer and, in some cases, with the M110, both systems part of the Army inventory for almost 30 years. Direct-fire systems are now able to engage targets and score kills at ranges formerly considered more appropriate for indirect fires. If this trend continues, the value of indirect fires will certainly diminish.

The only modernized fire support systems on display in the desert other than certain new munitions were the MLRS and the Firefinder radars—both of which performed exceptionally well. Our old howitzers, however, were so under-appreciated that the official Department of Defense Report to Congress, *Conduct of the Persian Gulf War*, does not even list them under ground systems. We clearly need new systems in the artillery, but we may not need what some think.

Howitzers. The M109A2s of my battalion kept up with the supported tank brigade. But they did so because the tanks moved forward at a fraction of their maximum speed. Even then, the howitzers were hard pressed to maintain the modest pace asked of them. There were frequent stops to allow engines to cool before rejoining the great thrust northward. Being fully combat loaded, suspension systems proved barely adequate to support gross vehicle weight across the soft, rolling sands. Of the two howitzers eventually towed into Kuwait, both had gone down initially because torsion bars failed.

Clearly, we could use an improved

howitzer with enhanced automotive and mobility capability. The faster and quicker the howitzer, the better it will be able to support maneuver forces, mass fires and then displace, reducing the threat of counterfire. The Paladin will hopefully provide this.

Some greater range capability would be helpful, but it's neither decisive nor worth major development and production costs. Why? We tend to view increased range in the cannon systems as providing us greater opportunities for deep attack. Currently, however, increased range is primarily useful for expanding lateral coverage rather than lengthening our reach across the FLOT. Greater range providing greater deep attack capabilities requires proactive target acquisition systems that can locate targets of all types beyond the range of direct observation. At the tactical level, such acquisition systems remain modest and unsophisticated.

Target Acquisition. On the afternoon of 26 February 1991, having been in incidental contact with light and dispersed enemy elements for less than an hour, the scouts of our lead tank battalion crested a small sand dune and found themselves under fire in an engagement area prepared by a dug-in enemy brigade. A look at the battlefield after the war showed enemy tanks positioned in turret defilade and arrayed in a line about five miles along the now famous 73 Easting.

Could these Iraqi positions have been ranged and suppressed by our artillery? Of course. Was it our commander's intent and

guidance that the enemy be engaged at maximum standoff range? Clearly, it was. So, why did we meet the enemy as we did?

The enemy was not engaged with artillery fire at near maximum range because we simply do not have the target acquisition systems to provide real-time input to brigade and division battle staffs. Specifically, we clearly need some sort of remotely piloted air vehicle (RPV) or a similar platform to locate targets and then assist in their attack. Without this capability, we realize only marginal gains from enhancing the range on cannon systems. The experience in the Iraqi desert demonstrates that without a more robust, comprehensive target acquisition capability, we can never take full advantage of the range we have now.

The Firefinder radars are superior. But they only detect indirect fires, and they only detect them when rounds are in the air. They are, therefore, reactive rather than proactive. We need the ability to develop targets, including both direct-and indirect-fire targets at great range and attack them before our direct-fire systems close in. Such a capability would allow us to seize the initiative and contribute significantly to the fight.

Except for traditional ground-mounted systems such as scouts and FISTers, we could not develop direct-fire targets before closing within direct-*observation* range which, with the capabilities of the M1A1 tank and Bradley fighting vehicles (BFVs), equates to direct-*fire* range. Consequently, direct-fire battles erupted before

indirect fires were employed. If indirect fires of the future are going to be a combat multiplier, a system of choice by maneuver forces, we have to see and attack the enemy while he is beyond the direct-observation range of maneuver elements.

GPS. If there was one invaluable item of modern technology that transformed the operational concept of Desert Storm into such a major historical success, it was clearly the global positioning system (GPS). With GPS, my reinforcing battalion was able to fire a preparation for one division, pass through the barrier system and then cross 90 miles of open desert, mostly at night, and enter our maneuver brigade's formation before our major contact. This is the equivalent of Joe Montana throwing a 90-yard pass to Jerry Rice while blindfolded. Without GPS, we probably would never have attempted this mission. (See the "View From the Blockhouse" feature "Tactically Employing Today's SLGR" on Page 46, June 1993.)

The inexpensive receivers now available need to be widely distributed. Commanders need them, firing units need them and first sergeants and those running the logistics and support efforts need them. These systems are a substantial combat multiplier.

Organization

There are a handful of organizational issues we need to resolve. Principal among these is the 4x6 organization, but several other issues exist regarding basic DS artillery tables of organization and equipment (TOEs).

When Desert Storm first erupted and before our division was alerted to deploy, our brigades provided equipment, personnel—even entire organizations for deployment. After the division provided a chemical company, military police, Apache battalion and trucks and trailers to other deploying units, a senior officer was finally forced to ask if anyone realized a TOE was supposed to detail all a unit needed to perform its combat mission. Regrettably, the truth is that TOEs are too often inadequate.

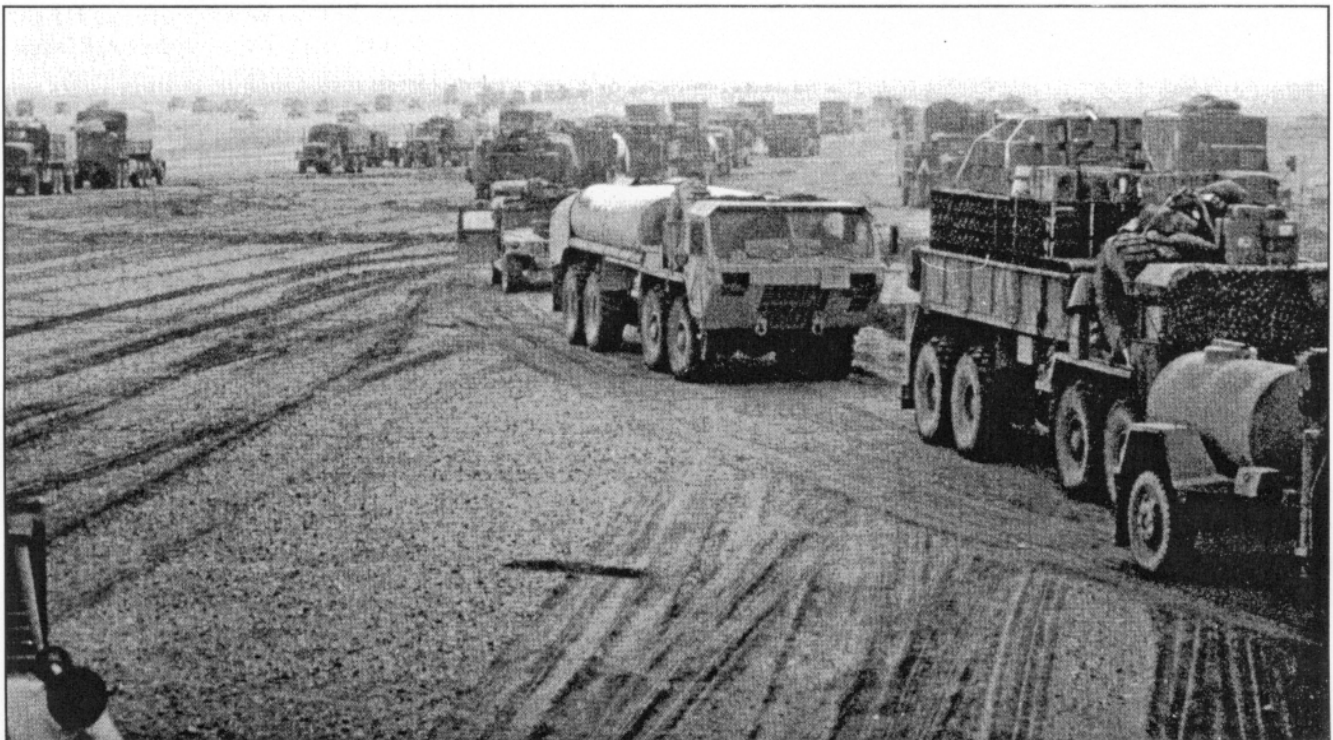
Artillery Vehicles. FSCOORDs and FSOs don't have appropriate vehicles to perform their combat tasks. Maneuver commanders from the company through the division levels want their FSOs with them. If the maneuver commander is mounted in an M1A1 or Bradley, his FSCOORD/FSO needs to have a similar vehicle. We may not be able to provide a tank or a Bradley, but we *clearly* need to

provide him more than a HMMWV. As others have stated so well, "What is a mere inconvenience at the NTC becomes a serious operational shortcoming in war."

The Army recognizes this deficiency. The day before my battalion shipped its vehicles to port, we were quickly issued M113s for the FSCOORD and the task force FSOs. Although this "emergency issue" was welcome, it would have been more welcome had the vehicles come equipped with radios and communications systems. At the same time, we were issued a handful of additional M113s for the firing battery platoon leaders.

The artillery has lived with this organizational deficiency for years. Now, as we're drawing down the active force, we must fix it. The elimination of many maneuver battalions will make available tracked vehicles and communications systems suitable for use by artillery commanders, FSOs and leaders.

Manning FSEs. For 24-hour operations, FSEs at all levels are undermanned. In my organization, brigade and battalion FSEs were authorized an officer, a fire support NCO, a computer operator and a driver—*four* soldiers. Given the demands of shift work, supervision, security, drafting orders, constructing overlays and



Behind the Front Lines in Desert Storm. Maneuver battalion commanders are responsible for keeping an inherently disorderly place somewhat organized and controlled.

movement and the preparations for it, this is inadequate manning—especially at the brigade level.

Again, the Army recognizes this shortage. Before deployment and continuing throughout the build-up in the desert, additional soldiers were transferred to us from many units and organizations. Ultimately, I had seven soldiers (including three officers) at the brigade FSE and five at the battalion level. This was close to what our doctrine and TOEs should mandate, although I would argue for six at the battalion level plus additional increments once the vehicle issue already discussed is addressed.

General Support Trucks. Again, it came as little surprise that we were inadequately resourced for wheeled cargo carriers. The trucks we had on our TOE were satisfactory for the many TOE items that must be carried. However, there's no space to transport many other items not in the TOE: building materials for bunkers, additional shelters, field sanitation devices, five days of food and water and countless other items unnecessary in normal training at established training facilities in a mature logistical theater. Another specific shortage was fuel trucks.

TOE Distribution. Finally, our distribution of equipment is not well-suited for many tactical missions. For example, my battalion was authorized two recovery vehicles, two heavy expanded-mobility tactical truck (HEMTT) fuelers, and two position and azimuth determining systems (PADS). For the more centralized control inherent in defensive operations, such distributions are acceptable. However, under offensive operations where control may be very decentralized, such equipment distributions aren't logical allocations of essential capabilities.

In Operation Desert Storm, for example, with our firing batteries operating immediately behind the maneuver task forces and rather widely dispersed across the battlefield, each needed a PADS. At an artillery conference before deployment, a senior artillery commander directed PADS available from inactivating artillery units in Europe be issued to deploying units so each battery would have one.

By tacitly acknowledging the inadequacy of the TOE and providing permission to acquire equipment not authorized, this significant shortcoming was eliminated. Eventually, we also were issued six recovery vehicles. Regrettably,

we never had more than two fuelers.

The rule for unit design should be that key items of supporting equipment need to be assigned to battalions in numbers evenly divisible by the number of firing units. In many instances, we have been forced by limited resources to establish TOEs that are inadequate for certain combat missions—usually the offensive mission. But the time has come to effect changes.

With the force reduction now underway, we need to push forward with an extensive review of equipment and personnel authorizations and, at a minimum, eliminate those discontinuities that have existed for too long. If we are going to accomplish all missions, we need organizational TOEs crafted with that in mind. Equipment is now available (or soon will be) from inactivating units. The artillery must compete for it, or it will be distributed to other branches and components as it has been in the past.

Developing Munitions versus "Launchers"

This article has addressed some thoughts that seem most significant after two years of reflection on what we did and how we did it during Operations Desert Shield and Storm. But there's one last item we should consider.

Perhaps the time has come to seriously ask ourselves if we have done all that can be done with the traditional cannon concept. Maneuver commanders greatly appreciate what we can do, but they still want more. They want us to see at ranges beyond their own direct line-of-sight and engage and kill specific, point targets at these ranges with almost immediate responsiveness. With our current cannon concept, it is unlikely we will meet many of these desires, particularly the desire for reliable, high-probability, point-target kills.

Given the wonders of modern technology, the time may have come to begin transitioning from our long-held preference for viewing the cannon as a system in itself to viewing it in a more limited way—as merely a "launcher." In the current technological environment, we must seriously consider investing much more in the projectile and much less in the launcher—be it cannon or rocket.

We are very close to having incredibly capable, brilliant munitions that can fly great ranges, find particular target suites, discern specific targets designated for

destruction under the maneuver commander's intent and produce high-probability kills. A few such highly capable projectiles could replace many thousands of projectiles currently in use, resulting in enormous savings in manpower, haul capacity and many other tasks associated with crewing, supporting and sustaining our labor-intensive howitzer fleet.

The launcher (cannon) for such a system need not be radically different from those now in use. Improvements in automation and mobility matching that of the supported force are clearly in order, but other major enhancements would be better invested in munitions rather than in the launcher.

Fire support of the future needs to move in this direction: greater probability of locating and killing targets at greater range with fewer projectiles and, hence, smaller manpower and logistical loads. Direct-fire systems have already moved into the range bands where artillery used to reign unchallenged. They are there to stay.

The time has come for fire supporters to move beyond the next hill—even the one after—and stake our new claim. If we do not, in the next war we may find ourselves playing a minimal role in contributing to the maneuver fight.



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