

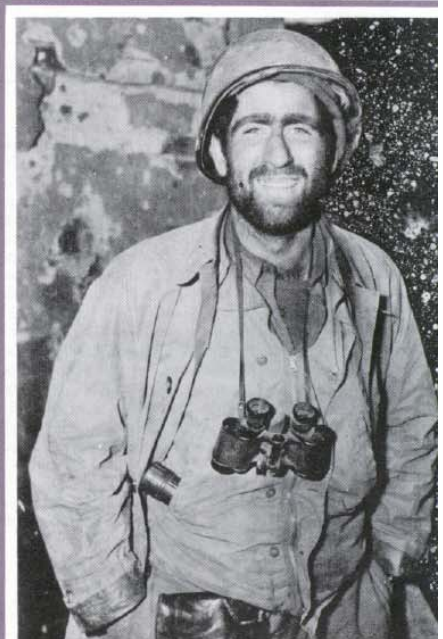
Field Artillery Journal



September-October 1986



A Renaissance



Field Artillery Journal



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Number 5

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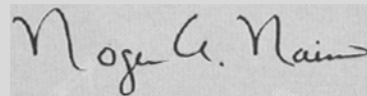
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History's Silver Screen

Opinions regarding the value of military history are as varied as the thinkers themselves. Thomas Hardy once noted that "War makes rattling good reading...." A somewhat less enthusiastic Barbara Tuchman observed that "Dead battles, like dead generals, hold the military mind in their dead grip." But it seems to me that B.H. Liddell Hart captured the truth of the matter when he contended that "The practical value of history is to throw the film of the past through the material projector of the present onto the screen of the future."

This issue of our *Journal* plays the projector's role. It flashes the lessons and the inspirations of past battles, leaders, and heroes on the silver screen of the AirLand Battlefield. It attempts to give commanders in the field the tool they need to make good on Jomini's contention that "Military history, accompanied by sound criticism, is indeed the true school of war."

Take the time to review the many lessons projected in this issue. You owe it to yourself and your soldiers to make the most of the Field Artillery's past victories and defeats.



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Field Artillery Journal

On the Move **A Reaffirmation of the Value of History**

MG EUGENE S. KORPAL



During the past decade, the study of military history has enjoyed a remarkable renaissance in our Army. Beginning in the early 1970s, the Army's leadership began to reaffirm to the potential value of history as a means of understanding the present. At that time the Commandant of the Command and General Staff College formed the Combat Studies Institute for the express purpose of using history as a guide to deal with current issues and problems. Later in the 1980s, the Commanding General of the Training and Doctrine Command (TRADOC) reinstated military history education in virtually all service school curricula.

Despite all this, many commissioned, warrant, and noncommissioned officers still question the value of history. They simply do not appreciate how the study of the past can help them in their everyday jobs. We, Redleg leaders, need to correct this situation.

As the Army and our nation gain a better perspective on the Vietnam War, the study of history will acquire progressively greater importance. What's more, with the passage of time, fewer and fewer soldiers will have combat experience. More and more leaders will simply have to rely on history to provide a vicarious knowledge of battle. Fortunately for today's Redlegs, good military history abounds.

Through history, leaders can draw upon a broader realm of experiences and, therefore, sharpen their understanding of the problems they confront.

It describes not only tactics and techniques, but also how soldiers react to the fears and anxieties they face in combat. Such history takes the theory taught in service schools and in training manuals beyond the abstract and places it in a *real* context. In this way, the study of history produces a greater understanding and appreciation for the timeless principles and human dimensions of warfare.

History also teaches soldiers many valuable *lessons*. For example, one learns from a study of the American Civil War that European military observers of that bloody confrontation failed to appreciate the significance of technological changes. That war provided more than sufficient sanguine evidence that cavalry charges and shoulder-to-shoulder formations were suicidal in the face of rifled muskets and cannons. Remarkably, most European leaders perceived the Civil War as an aberration conducted by rank amateurs who knew little of the military art. Their historical nearsightedness persisted even in light of the Russo-Japanese War of 1904-05 where indirect field artillery fires first emerged. But history always exacts a price from those who ignore it. And the Europeans paid for their flagrant failure in historical insight during the the bloodbath of World War I.

Beyond an understanding of principles and practical lessons, history offers today's soldiers still other benefits:

- By studying history, a warrior gains a better perspective on current doctrine by learning its origins and the reasons for its evolution over the years.

- History also provides a broader perspective for decision making. Years ago, a prominent historian said that "Everyone is his own historian." He meant that every person has an individual interpretation of the past and its significance. What's more, people make decisions based upon

this often narrow appreciation of past events. Through history, leaders can draw upon a broader realm of experiences and, therefore, sharpen their understanding of the problems they confront.

- The proper study of history also produces better analytic thinking. Contrary to popular opinion, history is more than names, dates, and places. It involves drawing relationships between seemingly unrelated events, finding themes and continuities that link the present with the past, examining alternatives, and reaching conclusions based upon facts and considered opinions. Studying history shows the soldier that there are few absolutes in human behavior and certainly no neat formulas for winning battles.

- Perhaps the ultimate goal of studying history is developing "historical-mindedness." This way of looking at the world is more than just studying the past to learn a body of facts. Rather, historical-mindedness is a particular way of thinking—a broad-ranging exploration of knowledge, a sense of discrimination, an ability to synthesize, and an imagination that topples the most challenging problems.

Given all these advantages, it's little wonder why military history has emerged once again as an important facet of our professional soldiers' education. There can be no doubt of the utility of history. If for no other reason, Redleg leaders should study our branch's great legacy as a fertile seedbed of inspiration. After all, field artillerymen in actions ranging from the Hornet's Nest at the Battle of Shiloh to the courageous stand at Saint Vith during the Battle of the Bulge can inspire today's "Kings of Battle" by testifying to the importance of firepower in combined arms warfare.

The past is indeed prologue. It's our charge to ensure that we use the past to inform the present and attain victory in the future. It's our duty to make history work for today.



Incoming

LETTERS TO THE EDITOR

In Search of History

An Affirmation of Character

As a military historian interested in US Army World War II leaders, I was pleased to read Major Jerry D. Morelock's outstanding biographical article on Major General John S. Wood in the November-December 1985 issue of the *Field Artillery Journal*. Morelock captures the essence of Wood's dynamic leadership style as well as his devotion to the ongoing study of the profession of arms. Although these attributes were not unique to Wood, his successes on the battlefields of World War II Europe are unmistakable proof of the value of professional study and thought for the military officer. Wood's physical and mental preparation for war, his knowledge of combined arms, and his intelligence are certainly enviable values for today's officers. However, as Morelock indicates, Wood's dedication and offensive spirit proved his undoing and led to his relief.

Wood's Corps Commander, Manton S. Eddy, and his Army Commander, George S. Patton, Jr., both agreed that Wood's relief was necessary for the successful continuation of operations during the difficult Saar Campaign. Wood's relief can serve as a case study for future division commanders because it demonstrates that even men with the best preparation for war must have the balance, strength of character, and self-control to continue offensive operations against a determined foe while caring for their men and caring for themselves.

Robert H. Berlin
Historian
Combat Studies Institute
Fort Leavenworth, KS

Then and Now—A New Perspective

During the past several years, many military strategists have written extensively about the deep attack as outlined by AirLand Battle doctrine. In many cases, they have used history to

justify the deep battle by pointing to the Soviet offensives and doctrine of World War II. Unquestionably, the Soviets succeeded in exploiting and massing their artillery and infantry in 1943-45 and hit targets deep behind the German front lines. Rolling barrages and breakthroughs certainly led to Soviet victories during those years and reinforced in many minds the need for deep attacks against the enemy's rear echelons.

In "Then and Now—Fighting it Out at Operational Depths," (January-February 1986 *Field Artillery Journal*) Major Mark P. Gay tries to examine in a few pages the deep attack. He correctly points out that the Soviet Army used the deep attack to paralyze the German Army, and that the Israeli Army used the deep attack during the October 1973 war against Egypt. Less convincingly, he implies that the US Army used the deep attack against the German Army in 1944-45.

In reality, the US Army did not have deep attack doctrine as his manuscript suggests. The Army did, however, stress mobility and maneuverability and employ these principles against the Germans with considerable success as history indicates. His example of the encirclement of the Ruhr and the pursuit to the Elbe from 30 March to 11 April 1945 also does not epitomize "the precision, rapidity, and synchronization of combat power with which the US mobile forces were able to fix and defeat enemy forces throughout the depths of the German defenses."

The Americans did advance rapidly through Germany in the spring of 1945, but not because their *doctrine* stressed the deep attack. The German Army the Americans faced was basically second-rate and depleted by action on the Eastern Front. A few good units existed, but for the most part cripples and boys filled the ranks of the German Army in the west after 1944. The Americans were also able to destroy German defenses rapidly because the Germans were surrendering and offered no real resistance.

If one is to use history to gain lessons learned, he must do more than just rely upon vignettes which can be used to support any argument. History does not provide definitive lessons. It does teach, however, that there are no absolutes. For history to be valuable to the Army officer, it requires systematic study in depth. A cursory reading will provide nothing but time wasted and perhaps lead one to the wrong conclusions. By establishing a good reading program that takes one from the general to the specific, a professional can gain the depth and breadth necessary to understand history. This means more than one book on any given topic should be read. Each will provide different insights into the campaign or battle and help the reader avoid hasty generalizations such as those advanced by Major Gay about the American use of the deep battle in World War II. A more in-depth analysis would have revealed that much of the American success during the war against the Germans came not so much from American doctrine of mobility but from the rapidly *declining strength* of the German Army in the West.

The Army officer should not examine the American experience to gain insights into the deep battle. During the past several years numerous books have appeared that discuss the Soviet and German use of the deep attack. These works identify the true roots of AirLand Battle doctrine. Earl Ziemke's *Stalingrad to Berlin: The German Defeat in the East* (1968, reprinted in 1984) examines the German experience in great detail. John Erickson's *The Road to Berlin: The Continuing History of Stalin's War with Germany* (1983) points out that the most important innovation by the Soviets during the war was the emphasis on combined arms warfare designed to disrupt and destroy the enemy forces throughout the depth of their defenses. Both of these books provide an excellent historical perspective because they detail the successes and failures of both armies in implementing deep battle attacks.

Dr. Boyd L. Dastrup
Branch Historian
TCAD, USAFAS



For the Museum—A Challenge

The Field Artillery Museum Association takes justifiable pride in its museum, including the famous cannon walk; and it has a good display of such items as uniforms, harnesses, and

cannons. But history did not stop with the horse, and the artillery trade consists of much more than feeding the guns.

Why is there no systematic display of developments of field artillery communications equipment and comparisons with contemporary foreign items? It could start with wig-wag flags and the heliograph, including the development of the telegraph and the telephone and also current radios.

How about a systematic display of gunnery techniques from open sight laying, fifth section towers, early fire direction center fans, slide rules, various computing devices, and comparable foreign systems?

Early target acquisition systems—the old Bull-Tucker sound-ranging set (a real technical breakthrough in its day) or even a World War II GR-3C sound-ranging set and the various flash-ranging instruments—have completely disappeared because there was no place to preserve such items.

The list could be expanded *ad infinitum*. Such sequential displays have not only historic and nostalgic interest but are of

technical value as well. There are still men around who remember some of these developments and could help to organize displays. Many of these old items may well be in various technical service attics and junk piles. But there seems to be no effort at collecting them. Time's awasting and history is being made everyday.

Perhaps each department of the Field Artillery School could lay out a collection plan, indicating which major items to seek. And the *Journal* could help by publicizing a "wanted list."

It should be standing operating procedure that whenever an item becomes obsolete, one copy be offered to the Field Artillery and Fort Sill Museum for preservation. Obviously, the museum cannot accept and store every item offered; but with the help of the various departments, the curators could assemble a representative collection and keep it up-to-date.

Arthur R. Hercz
COL(Ret), FA
Ann Arbor, MI

Another "Must-Read"

I reviewed with interest Brigadier General R.W. Crossley's reading list in the March-April 1986 issue of the *Field Artillery Journal*. One particular volume worthy of note was missing: T. R. Fehrenbach's *This Kind of War: A Study in Unpreparedness*.

When I was commissioned in the summer of 1976 my father, a Korean War vintage Marine officer, gave me a copy of

This Kind of War as a gift. He said it should be mandatory reading for every junior officer and NCO. After I read it, I agreed with him.

Written, by the author's admission, as a platoon leader's book, *This Kind of War* is a popular account of the Korean War. Using operations journals and interviews with small unit leaders as primary sources, Fehrenbach tells the story from the standpoint of the troops on the ground. Not purporting to be a definitive history,

the book follows the ground action from 25 June 1950 to its inconclusive end in July 1953. The book abounds in lucid accounts of small unit actions and heroism. I wholeheartedly recommend that every field artilleryman put it on his reading list.

Robert G. Howard
CPT, FA
San Francisco, CA

Take Another Look

In with the Old

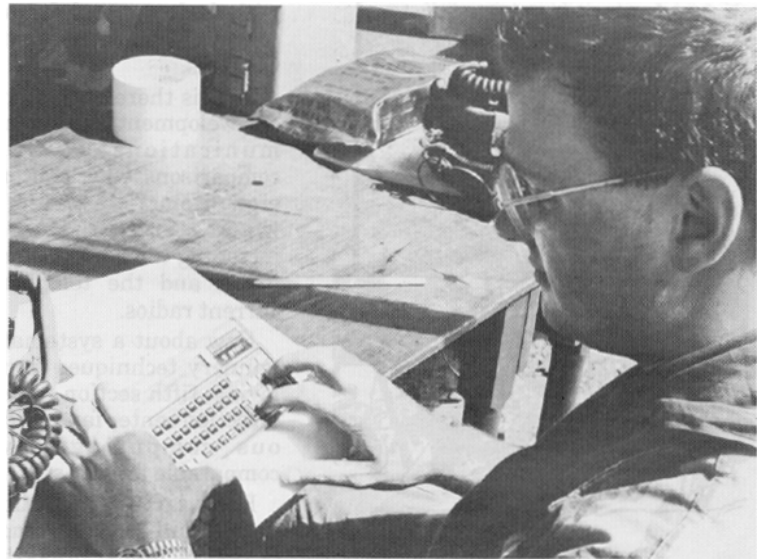
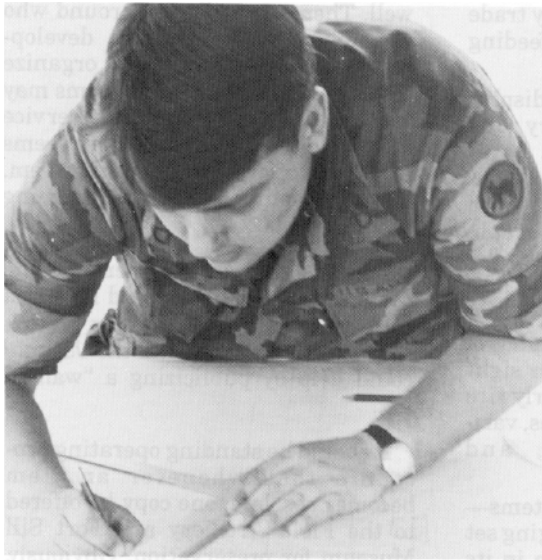
There is an article in the "View from the Blockhouse" section of the September-October 1985 *Journal* which should raise a few eyebrows among field artillerymen in both the Army and the Marine Corps. The article, "Automated Fire Direction Instruction at USAFAS," along with other articles which have appeared in past *Journals*, implies that the days of "old-fashioned" manual gunnery are gone forever. With the

introduction of the battery computer system (BCS) and the backup computer system (BUCS), the School will teach only a minimal amount of manual gunnery skills to new lieutenants attending the Field Artillery Officer Basic Course. The Gunnery Department will focus on instruction in automated fire direction computation.

I believe the approach is wrong-minded. Basic course lieutenants are assimilating a "learned helplessness" in the form of reliance upon these automated systems.

They are not learning how to improvise in the event of system failure. In the field artillery, however, we cannot afford to "get by." A fire direction officer (FDO) must know how to put steel on target at *all* times. If an FDO cannot compute a manual message and apply a graphical firing table setting to his "sticks," how can he possibly perform his job?

This lack of knowledge of manual gunnery skills among new officers will not immediately affect our ability to put steel on target. There will still



With the introduction of the battery computer system (BCS) and the backup computer system (BUCS), the School will teach only a minimal amount of manual gunnery skills to new lieutenants.

be many officers and enlisted men who possess highly-developed, manual gunnery skills. But in the not too distant future, the cadre of experts from the "old school" will fade away. I feel sorry for an FDO who has to resort to "Kentucky windage" because the chief computer in his fire direction center has not had the time to input a new data base after a battery has occupied a new position.

Any fire direction officer who relies solely on a computerized solution for his firing data is inviting disaster. New doctrine calls for the BCS to serve as the primary source of firing data with BUCS as a backup. No mention is made of using a check chart to verify the accuracy of the computerized firing solution. A smart FDO will use a check chart to ensure that his data is accurate and reliable. A chart

will also allow him to visualize where the rounds will impact by giving him a graphic picture which BCS and BUCS do not provide.

Deleting manual computations from the fire direction center also courts disaster because it ignores the most important dimension of combat effectiveness—the human element. No matter how well-trained a BCS or BUCS operator may be, he is still a human being who is capable of making mistakes when he is under great pressure or suffering from fatigue. Just because the BCS "says" that firing data is safe does not guarantee that it is. What if the BCS operator were to forget to input a no fire area into his data base when one is required? The potential for killing friendly troops during combat or an exercise is great if this sort of error of omission goes undetected.

I am not opposed to the introduction of these new automated fire direction systems. I am, in fact, a proponent of these systems. My experiences with BCS and BUCS have been positive ones. Nevertheless, I am not in favor of a total reliance on these systems because we, as field artillerymen, owe it to ourselves, our troops, and the men we support to be responsive even if the computers fail. Shooting "cold stick" is precarious at best, even under ideal conditions. If we begin to rely entirely upon computers and forget how to place accurate fires on a target, we will reduce ourselves to being nothing more than button-pushers. I hope this never happens, but I fear it may.

Richard B. Czechowski
2LT, USMC
Twentynine Palms, CA

More Thoughts on "Fire Support for the Rear Battle"

Lieutenant Colonel Paul Treolo's problem statement in "Fire Support for the Rear Battle" (January-February 1986 *Field Artillery Journal*) portrays a very real dilemma: Without an adequate response to the rear area threat we risk defeat. Yet with an adequate response *dedicated* to the rear battle we run the risk of losing the traditional battle at the forward line of own troops.

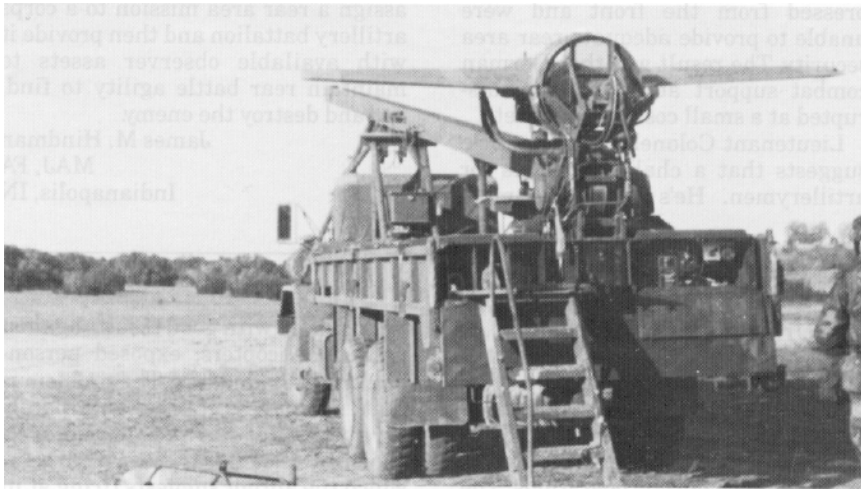
I say *dedicated* because we need to contain and counter the threat as quickly as possible. Assuming that local defenses are not sufficient, the most responsive systems—close air support, assault helicopters, and fixed artillery—are normally all in high demand elsewhere. Thus, the ideal, as Lieutenant Colonel Treolo points out, would be dedicated assets. However, force structure constraints extract a very high price for such dedication.

Assuming the existence of dedicated systems, the next problem is employing them fast enough to contain

the threat. This challenge has two aspects:

- The timeliness of airmobiling a 105-mm battery.
- Providing fire support coordination and sorting out the enemy from the friendlies.

I fully concur with training the military police to react in these situations. However, the problem then becomes training them as well as other rear area personnel in employment of close air support, assault helicopters, and field artillery. This also makes the rather large assumption



that these folks have radios—a nontrivial problem in itself.

I have emphasized dilemmas and problems not to dwell on the difficulties but to paint a background for a slightly different approach.

When I was at the Army Development and Employment Agency, a system was proposed ideally suited to these rear battle requirements as well as offering a gap filler to augment deep attack, airborne, airmobile, and economy of force operations—all of which argue for fast reacting systems that do not entail a deployment sortie or logistic support requirement. The initial Field Artillery Community response was not favorable,

in part because it was not a traditional system and also because it was perceived as operating poorly in an intensive, heavy battle. I'll give a brief sketch of the system capability and leave it to the reader to envision its applications.

The system would consist of three components:

- A small, lightweight, inexpensive designator for the forward observer.
- An expendable remotely piloted vehicle—the ammunition carrying delivery system.
- A shipping container and launch system which with minor ground support equipment constitutes the launch unit.

Such a system launched from a corps ammunition storage area would require only three to five soldiers and a couple of vehicles.

The system forward observer in the rear battle area needs to know neither his or the target's location. He only needs line of sight to the target. What's more, he doesn't even need a radio; the designator tells him if a system is available and permits him to employ it.

The remotely piloted vehicle's long range (+ 300 kilometers) as well as loiter time allows the unit to cover great areas, and overall command and control can be by radio or preplanned in support of a specific operation.

Granted, the system is not without potential drawbacks, but most of these problems are with the threat and friendly coordination difficulties in the forward line of own troops battle. These problems tend to go away in the missions discussed. An obvious advantage is that it would permit staged escalation of field artillery support. This would free the traditional high intensity system, with their attendant lift, personnel, command and control, and logistics tails, from these other missions until their participation is both required and appropriate.

Robert W. Zawilski
LTC, FA
Carlisle Barracks, PA

Still More Thoughts on "Fire Support for the Rear Battle"

Lieutenant Colonel Paul Treolo's article "Fire Support for the Rear Battle" (January-February 1986 *Field Artillery Journal*) missed a key point and probably the true focus of rear battle doctrine. Find-fix-destroy is the key point espoused in FM 90-14.

• **Find**—This is by far the most critical point for rear area and reserve operations. The field artillery can help to find the threat by attaching some of our often forgotten aerial observers to rear area commanders. Aerial observers can supplement military police route and ground security forces and provide a communications platform equal to the task at hand. Unlike the corps M102 battalions and fire support teams proposed by

Lieutenant Colonel Treolo, the aerial observers of field artillery brigades and division artilleries exist *now*. What's more, the survivability of the field artillery aerial observer is better in rear areas. Aerial observers and other aerial platforms can make a defense-oriented rear area force more offensively minded. Multiple air observers can provide warnings to base clusters or convoys through prearranged visual signals and direct movement of responding security forces.

• **Fix**—This has been and continues to be the paramount doctrinal problem in rear area operations. An enemy level II or level III threat allowed to move about in the rear area can inflict tremendous damage. An M102 battalion does not have sufficient range or lethality to fix enemy forces. The vast array of 155-mm munitions dictates its greater utility in rear area operations. A 3x8 155-mm M109A3 self-propelled battalion could provide up to 12, 2-gun

positions; or 6, 4-gun positions able to cover a large area. One 8-gun battery would provide sufficient capability in a division rear area. An enemy force must be fixed and contained so the rear battle commanders can take the initiative to destroy it. If the enemy retains the initiative the rear battle is lost. The rear battle commander must have artillery support available in order to fix the enemy; neither the military police units nor those units assigned in base clusters have sufficient firepower or mobility to fix a threat level III.

• **Destroy**—A level III threat will remain a significant problem until it is completely destroyed. The key to defeating such a force is the synchronization of the attack elements. Level III threat may not have a precise terrain-oriented target but like large-scale guerrilla operations it uses terrain, firepower, and maneuver to

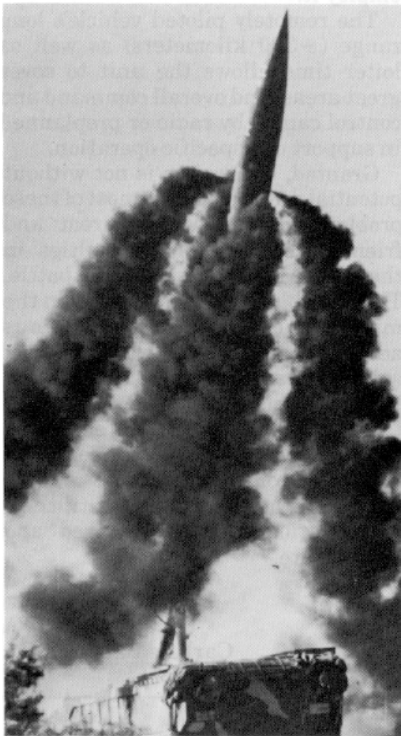
inflict the optimum disruption of the rear area operations. In World War II during the forcing of the Dnieper River defenses, Soviet forces inserted company-sized units by parachute into German division rear areas on the far side of the river. On the Dnieper, the Germans were hard-pressed

from the front and were unable to provide adequate rear area security. The result was that German combat support activities were disrupted at a small cost to the Soviets.

Lieutenant Colonel Treolo's article suggests that a challenge exists for artillerymen. He's right. We must

assign a rear area mission to a corps artillery battalion and then provide it with available observer assets to maintain rear battle agility to find, fix, and destroy the enemy.

James M. Hindman
MAJ, FA
Indianapolis, IN



An Unfair Look at Lance?

Captain Gary M. Bowman's article "The Point of Lance" (January-February 1986 *Field Artillery Journal*) provides an excellent summary of Lance missile operations. The tone of his article makes it clear that Captain Bowman does not feel Lance has been given fair consideration as an interdiction weapon. As one who has planned the corps-level employment of such weapons in each of the exercises Captain Bowman mentions—REFORGER, WINTEX, and Able Archer—I feel compelled to respond.

It is true that Lance offers a quick response, deep attack capability and is enormously valuable in the nuclear role for which it was originally designed. However, as a nonnuclear weapon system, Lance falls well short of the Army's requirements.

Lance's nonnuclear warhead section carries munitions which FM 6-42 states "are effective against targets such as truck tires, missile rounds, and radar antennas." Lance can also

be employed with good results against parked helicopters, exposed personnel, and fuel bladders. The problem is that nonnuclear Lance will barely scratch the paint of armored vehicles—the "hard, critical targets" which the author suggests firing at in the absence of Air Force support.

Given the limited amount of available ammunition, and the criticality of its launchers, the corps fire support element is hard-pressed to justify expending critical corps assets in what is essentially a harassment mission. For a better understanding of the fire support coordinator's target selection problems, I recommend FM 101-60-8, the *Joint Munitions Effectiveness Manual for Lance*.

In conclusion, if nonnuclear Lance is not employed as often as Captain Bowman thinks proper, I can assure *Journal* readers that the problem is more a lack of suitable targets than unwillingness on the part of the fire support element staff.

Philip J. Millis
MAJ, FA, USAR
Fort Wayne, IN

What's New on "A Royal Rendezvous"

In the July-August issue of the *Journal*, my article "A Royal Rendezvous" described the fire support instruction given at the Infantry School. Since that article appeared, fire support instruction has expanded in nearly every course. This update tells you what's new in that regard at Fort Benning, Georgia.

The first change is that our instruction now encompasses the entire fire support spectrum rather than a focus on field artillery. Accordingly, the instructional branch is now known as the Fire Support Branch.

The Fire Support Branch teaches a basic noncommissioned officers

course. During that course, a 2-hour practical exercise in the training set, fire observation (TSFO) follows a 2-hour block of instruction on call for fire and adjustment of fires. In the Infantry Officer Basic Course (IOBC), call for and adjustment of indirect fires has increased from 9 to 13 hours, with the additional hours spent in the TSFO practicing call for fire procedures. In addition, a new combined arms live fire exercise (CALFEX) with emphasis at platoon level will allow IOBC students to integrate direct and indirect live fires in a defensive scenario.

The advent of syndicate training for the Infantry Officer Advanced Course (IOAC) has placed additional demands on fire support instructors. The program of instruction now includes a

3-hour practical exercise on fire support planning and coordination at the company-level. Additionally, commissioned and senior noncommissioned officers in the Fire Support Branch work in the syndicate groups during tactics instruction and practical exercises. At the end of the IOAC field training exercise, the students observe a CALFEX which demonstrates the synergistic effects of the combined arms team.

Fire support instruction for infantry precommand courses has grown from a 1-hour update to a 6-hour block addressing the needs of battalion and brigade commanders. This instruction now includes a discussion of the roles of maneuver and fire support commanders, how to use a fire support officer, what to expect from a supporting

artillery battalion, the use of close air support and air and naval gunfire liaison companies, and the need for specific guidance to maximize scarce fire support assets. Fort Benning's senior artilleryman, a former battalion commander, leads these discussions.

The Infantry School's leadership has recognized the need to train infantry commanders in the effective use of fire support. Our challenge is to deliver the quality fire support they have learned to expect from the King of Battle.

Charles W. Clements II
MAJ, FA
Fort Benning, GA



A Call for Correction

The letter to the editor, "When Does 39 Days Equal a Year? (March-April 1986 *Field Artillery Journal*), cries out for correction. Lieutenant Colonel Michael S. Langone inadvertently, I hope, reinforces a misconception that I have found common among my Active duty counterparts. Lest some soldiers now on Active duty opt to continue their careers in the "part-time" National Guard with this 39-day figure implanted in their minds, I should like to address the Reserve Component from my perspective as a full-timer of the Minnesota Army National Guard.

The 1st Battalion, 151st Field Artillery confronts the same Army-wide standards

as a comparable Active Component battalion. To achieve or even approach these standards with a 39-day yearly schedule is clearly impossible. Our mobilization day soldiers (no part-timers here!) contribute extra time almost without exception in the form of readiness management assemblies, support of recruiting and retention programs, or extra planning meetings to assure the optimum use of the limited training time. They also go on full-time training duty for professional development, active duty schools, "extra" annual training periods, and other activities. Add to this the time spent without pay for travel to and from units of assignment as well as the hours stolen from the job or family to complete one

more correspondence subcourse or to recast training plans in response to changing requirements. Ask any Reserve Component soldier and he'll tell you that the 39-day year is a thing long past, if it ever existed.

Yes, "the present Army National Guard artilleryman ought to be proud of his part-time career," but let us at least tell it like it is, and that is definitely not 39 days a year. Active Component counterparts be warned—the benefits are good and there is a place for you in the National Guard, but not for just 39 days a year.

Daniel J. Saver
SFC, FA
MNARNG

Command Update

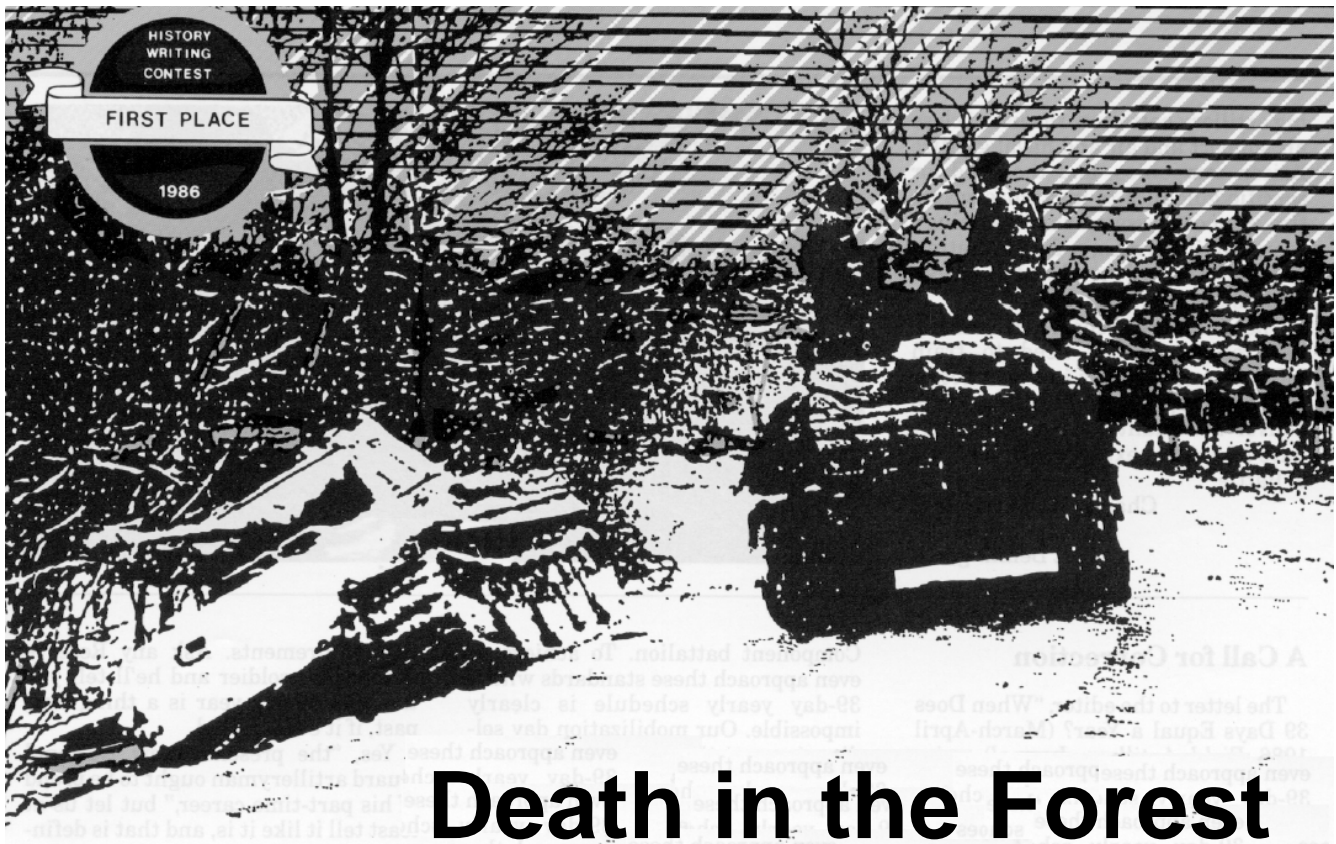
NEW REDLEG COMMANDERS

COL Kenneth W. Simpson
7th Infantry Division Artillery

COL Frank L. Miller, Jr.
558th Artillery Support Group

COL James H. Chapman
41st Field Artillery Brigade

LTC Richard L. Garlitz
557th Artillery Group



Death in the Forest

by Major Jerry D. Morelock

Newly-promoted Brigadier General Bruce C. Clarke was not a happy man. As he stood along the Saint Vith-Vielsalm road he viewed a seemingly irresistible torrent of vehicles fleeing west from the advancing German juggernaut. Against this flood, he saw the lead elements of his Combat Command B, 7th Armored Division, desperately inching their way eastward in an attempt to win the race to the critical road junction at Saint Vith.

Clarke knew that his men *had* to beat the rapidly advancing German forces to Saint Vith and deny them the use of its crucial road network through the forests, fields, and valleys of the nearly impenetrable Ardennes. If he failed to delay the spearhead of this last, desperate German counteroffensive, then the way to the Meuse and beyond would be open for the surging panzer and grenadier units. They could even succeed in splitting the Allied armies in two.

While Combat Command B moved in spurts and jolts toward its objective, Clarke realized he would need all the men and firepower he could muster to win this fight, but everyone else seemed to be moving the wrong direction.

Suddenly, a lieutenant colonel wearing crossed cannons approached the worried Clarke. Here, at least, was one man who was not headed away from the fight. To this day Clarke recalls what then transpired.

General, I'm Roy Clay. I have a separate battalion of self-propelled 105s, the 275th Armored Field Artillery. We've got some ammunition left and we're ready to work.

God bless you, Clay! [Clarke replied] You're all the artillery we've got. Head out the ridge east

of town and support those two engineer companies dug in there...."

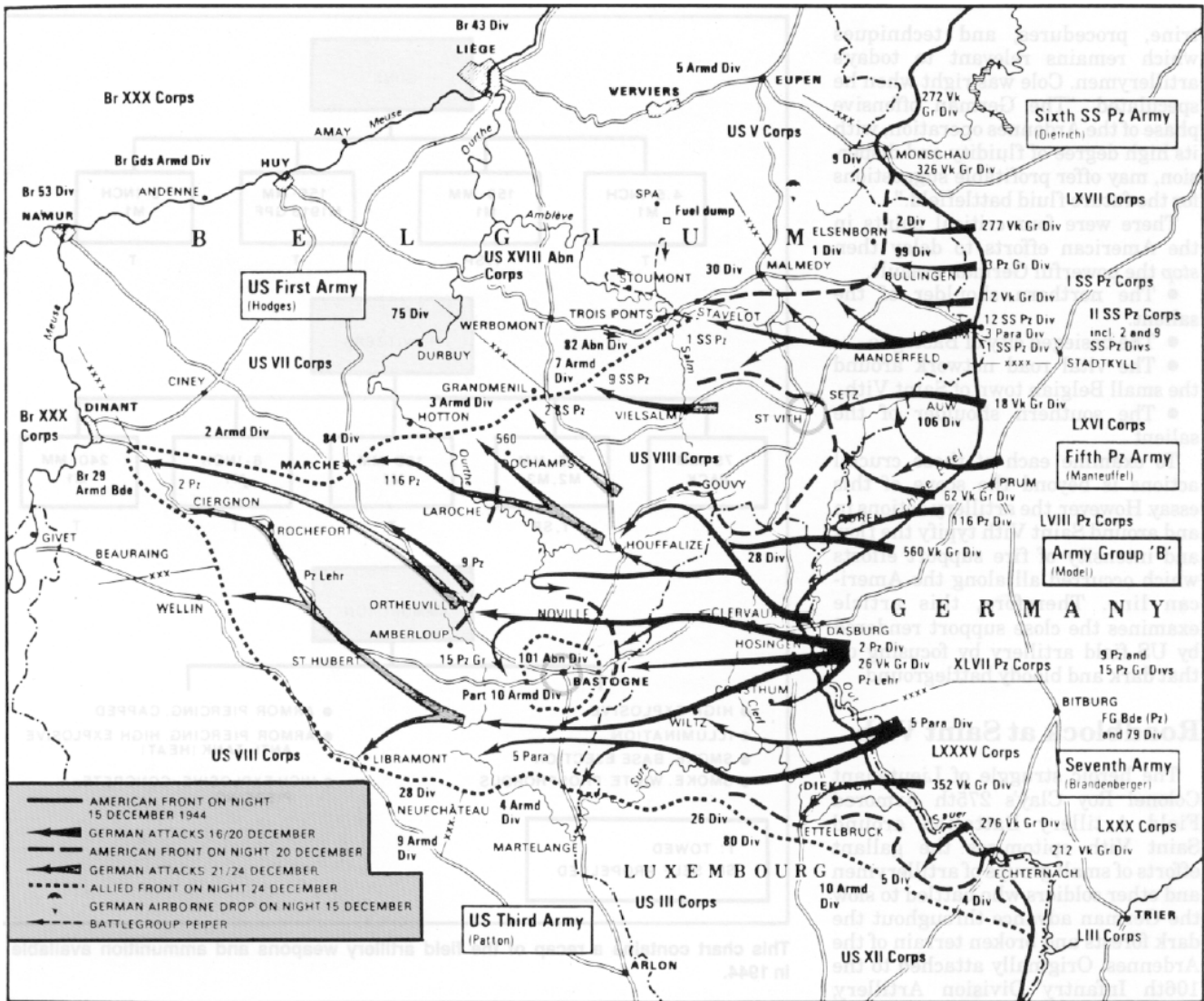
Bruce Clarke began to feel a little better!

The US Army's Greatest Battle

Launched in the early morning hours of 16 December 1944, the powerful German Ardennes Counteroffensive, better known as the Battle of the Bulge, was the greatest single battle ever fought by the US Army.



A 105-mm howitzer battery stands ready to fire west of Saint Vith.



This map provides a general overview of the Ardennes offensive.

Born of desperation, it was Hitler's last gamble delivered against a thinly held sector of the Allied line with a strength and fury no one on the Allied side thought was possible at this late stage of the war.

Major General Troy Middleton's understrengthed, over-extended VIII Corps bore the brunt of the surprise attack. Close to 200,000 German troops attacked 83,000 First US Army soldiers along an 80-mile front in the remote Ardennes region of Belgium and Luxembourg. By the end of January 1945, over 600,000 US forces were involved in stopping and reversing the German tide. But the price they paid was high. The Allies suffered 77,000 casualties; while estimates of the Germans ranged from 90,000 to a staggering 120,000 men.

As it had been on every battlefield of World War II, the close support provided by American field artillery proved absolutely crucial in this great American

victory. Of course, soldiers of every branch won the battle, but it was once again the *artillery's* close support which provided the margin of victory. In the official US Army history of the battle, historian Hugh Cole notes:

As the American defenses solidified along the shoulders of the salient or at strong points, such as Saint Vith and Bastogne, the artillery arm really commenced to make its weight felt. Experienced German artillery officers estimated that their American opponents...had a superiority in guns and ammunition of ten to one. This estimate is far too high: the Americans fired about 1,255,000 artillery rounds during the fighting...and by 23 December had brought a total of 4,155 artillery pieces into action.

German estimates of US artillery superiority were incredibly high because the ubiquitous American field artillery capitalized on its rugged equipment, superior mobility, and superb fire control system. In doing so, it delivered effective and continuous close support to the beleaguered ground-gaining arms which time after time frustrated the best efforts of the assaulting German waves. Cole concludes that "The record is replete with instances in which the attacker was diverted from his axis of advance, and his scheme of maneuver was destroyed by American artillery fire..."

During the Battle of the Bulge the close support provided by US artillery was a critical factor in delivering the final and, ultimately, mortal wound from which the Wehrmacht would never recover. But perhaps even more important than this mighty death blow is the legacy of close support doctrine,

procedures, and techniques which remains relevant to today's artillerymen. Cole was right when he speculated, "The German offensive phase of the Ardennes operation, with its high degree of fluidity and dispersion, may offer profitable suggestions for the future fluid battlefield."

There were four critical points in the American efforts to delay then *stop* the powerful German assault.

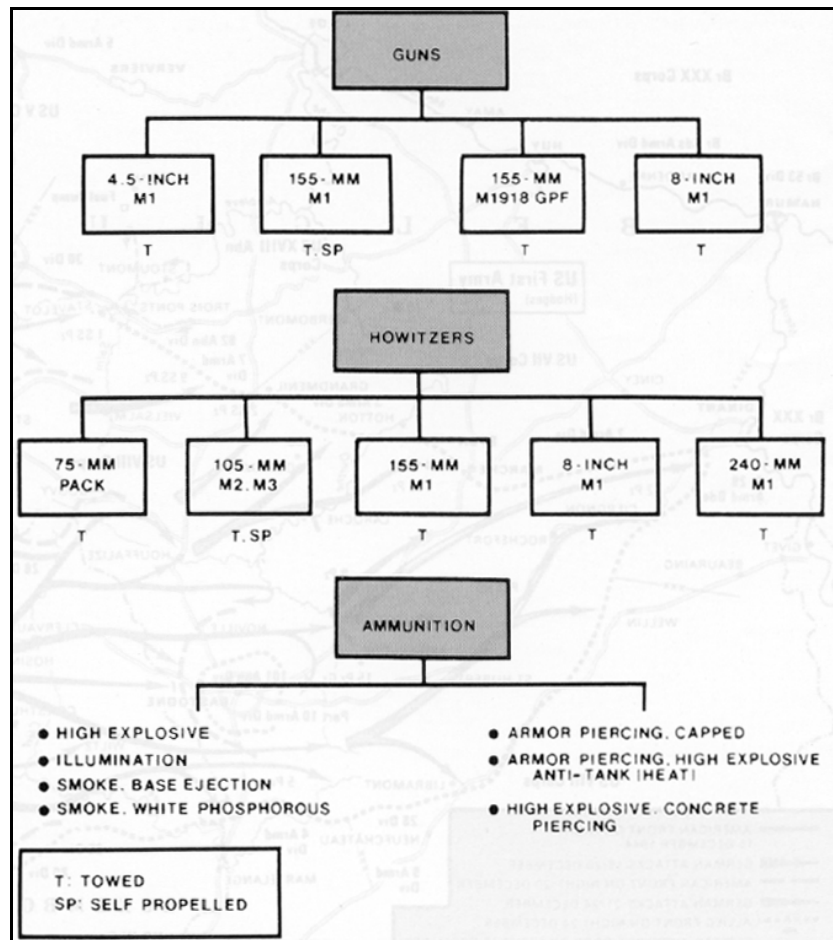
- The northern shoulder of the salient.
- The besieged city of Bastogne.
- The vital road network around the small Belgian town of Saint Vith.
- The southern shoulder of the salient.

To examine each of these crucial actions is beyond the scope of this essay. However, the artillery actions in and around Saint Vith typify the flow and intensity of fire support efforts which occurred all along the American line. Therefore, this article examines the close support rendered by US field artillery by focusing on that dark and bloody battleground.

Roadblock at Saint Vith

The heroic struggle of Lieutenant Colonel Roy Clay's 275th Armored Field Artillery Battalion around Saint Vith epitomizes the gallant efforts of small groups of artillerymen and other soldiers who battled to slow the German advance throughout the dark forests and broken terrain of the Ardennes. Originally attached to the 106th Infantry Division Artillery, Clay's gunners began the battle as the only artillery unit in direct support of the 14th Cavalry Group defending the vital Losheim Gap, the traditional invasion route through the Ardennes. At 0530 hours on 16 December, heavy shelling began to hit the 275th's five forward observation posts. Because the shelling severed all wire communications with the front line elements, the forward observers switched to their radios to contact the battalion fire direction center and quickly began calling in effective fire on the masses of German troops attacking along the entire front.

As the German assault infantry and armored vehicles swept the cavalrymen before them, they quickly cut off and surrounded most of the forward observation posts. But the observer parties continued to call in mission after mission, sometimes directing rounds onto their own positions. The 275th fired furiously all through that first long day and into the night, expending the equivalent of two complete basic loads in less than a



This chart contains a recap of the field artillery weapons and ammunition available in 1944.



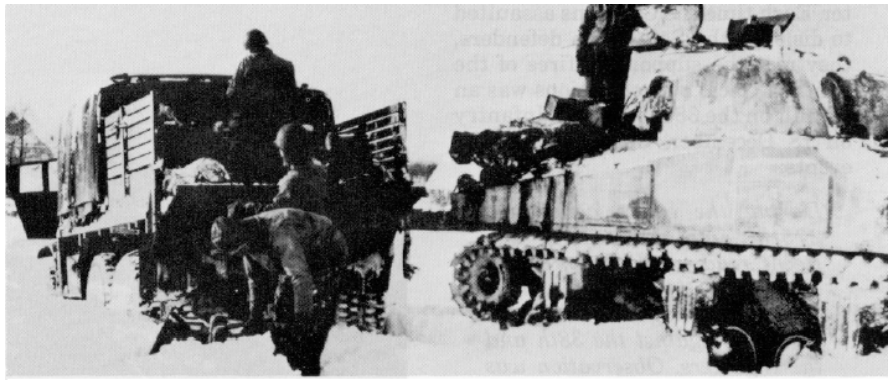
Soldiers from the 7th Armored Division watch the sky near Vielsalm.

day. Gun crews reported that water, poured down the muzzles to cool the weapons, emerged only as steam through the breech; and that paint peeled from barrels. The 275th's frantic calls for assistance to the 106th and 99th Division Artilleries went unanswered because those units were busy responding to German assaults on their own supported units. Finally, the 106th Division Artillery commander called the 275th and said, "You are on your own. Good luck."

The lightly armed cavalry troopers of the 14th Group were no match for the German assault waves, and by 1530 hours on 16 December the 275th found itself on the front line with no infantry between them and the enemy. Withdrawing in two columns to a less exposed position, the battalion continued to answer calls for fire. Disorganized and confused by the furious German onslaught, the cavalrymen frustrated Clay's gunners for much of 17 December by refusing to allow them to fire toward the east, fearing that cut off American troops could be killed in the shelling. However, that situation ended that afternoon when the battered and dazed 14th Cavalry Group withdrew for the last time and disintegrated as an effective fighting force. This situation led to Clay's dramatic offer to General Clarke and Combat Command B, 7th Armored Division. Clay recalled, "No one had to tell me I was under Clarke's command. I assumed it." For the next 2 critical days, the 275th Armored Field Artillery Battalion constituted the entire artillery support for the Saint Vith roadblock.

Clay's unit quickly reconstituted the necessary forward observer teams to support Combat Command B and established liaison with Clarke's command post. Clay described his activities for the next several days:

The 275th did lots of firing in support of Combat Command B. The forward observers didn't get any rest or sleep. They were busy. All targets were plotted on the battalion firing chart. Once a target was reported and fired on, we could repeat fire simply by a request for fire on the target number, name, or letter. The forward observers were furnished this data from the battalion fire direction center. The maps provided through engineer channels for artillery firing use were extremely accurate. Individual fence posts could be located on the map....The battalion



Logistics played a critical role in the American response to the German offensive.

registered on a known point frequently using forward observers to adjust. At night we used metro data to make corrections to our firing data.

Just as critical to the close support mission as accurate firing data was the uninterrupted flow of ammunition and other supplies to keep the hard-pressed unit functioning. Colonel Clay explained this critical "other half of the battle" as follows:

The 275th was entirely dependent upon its organic trains for supply support....My service battery commander reported early during the battle that we were picking up supplies from abandoned First Army dumps....The battalion was resupplied with ammunition and gasoline every day. I do not recall any shortage although the trains had to travel considerable distances. Since priority went to ammunition and gasoline, the battalion went to a schedule of two meals per day....We did have K- and C-rations

in addition. No one went hungry. Medical evacuation was to 7th Armored medical stations. The 275th did have a doctor...and an aid station which was always located near the battalion headquarters. Prisoners of war, including questionable civilians, were evacuated to the 7th Armored. PX supplies were abundant since the 106th left a PX warehouse in Saint Vith with adequate supplies of tobacco and other necessities. Because of the abandoned vehicles, the 275th had a plentiful supply of jeeps, 3/4-ton, and 2 1/2-ton trucks. It took command action by me to get rid of the excess after the battle.

Throughout the period from 17 December until Combat Command B was finally ordered to withdraw across the Salm River on 23 December, the 275th fired continuously while protecting itself from frequent ground attacks. Often during the ebb and flow of the fighting, the 275th actually held a portion of the perimeter.

Each time the Germans assaulted to dislodge the Saint Vith defenders, they met the supporting fires of the 275th. Typical of such actions was an assault on the 38th Armored Infantry on 18 December. Cole recounts the events:

During the entire action the 275th...emplaced along the Recht road northwest of Saint Vith, fired concentration after concentration against the enemy thrusting against the 38th and the engineers. Observation was poor—the 18th was a day of lowhanging fog—but the 900 rounds plunging onto the Schoenberg road did much to check the grenadiers.

Each time the hard-pressed tankers and armored infantrymen of Combat Command B came under attack, forward observers like Lieutenant Mike Shanahan of the 275th provided the crucial close support. In his book *Battle: The Story of the Bulge*, John Toland records the rapid response to another German push along the Schoenberg road:

At 8:05 p.m. [Major Don] Boyer, Combat Command B, 7th Armored, was still in position east of Saint Vith. He heard heavy tanks clanking down the Schoenberg road. Quickly he shifted machine gun and mortar fire to the road. Dark enemy forms running behind the tanks dropped or ran to the rear. Boyer figured if he could stop the infantry, someone else could take care of any tanks that punched through. He telephoned the forward observer of the 275th...Lieutenant Shanahan. "Mike," he cried, "give me all the fire you can on the Schoenberg road from the main line of resistance east." In 2 minutes shells ripped overhead and exploded on the road.

Late on 19 December, the 7th Armored Division Artillery began to arrive in the vicinity of Saint Vith, and the 275th started receiving some help in providing the desperately needed close support. To coordinate the fires of all artillery units in the area, the commanding officer of the 434th Armored Field Artillery Battalion established a group fire direction center. In addition to coordinating fires, such group control eased "cross-leveling" of scarce resources



Engineers prepare a railroad bridge for demolition.

among the battalions and expedited the movement of logistic support from rear areas.

As the weary soldiers of Combat Command B and attached units finally withdrew back across the Salm River on 23 December, they could say with justified pride that their classic delaying action had fatally slowed the German attack. Blocking elements of the Sixth and Fifth Panzer Armies, they had contributed "more perhaps than any other of the many defensive stands in the Ardennes" to buying the precious time required by Allied leadership to recapture the initiative. And by restricting the enemy's avenues of approach, the artillery was particularly instrumental in applying the US Army's tactical doctrine for countering such a breakthrough.

A final testimony to the role the 275th Armored Field Artillery Battalion played in this crucial phase of the battle appears in the US Army Armor School's history of the Saint Vith defense:

Every officer and man of the 7th Armored Division who participated in the Saint Vith action sings the praises of the 275th....This VIII Corps artillery battalion, commanded by Lieutenant Colonel Clay, chose to stay and fight. The coolness and poise of the officers and men in this organization were the subject of admiration on the part of all who came in contact with them. The battalion reflected the excellent training that it had received, and the missions that it

was called upon to fire were always fired effectively. The forward observers were outstanding in cooperating with front line commanders of Combat Command B. Six forward observers were lost during this action.

The men of the 275th faced death in the forests and fields of the Ardennes, but those who made the ultimate sacrifice were not lost in vain. At the four crucial points of this bloody battlefield—Saint Vith, Bastogne, and the northern and southern shoulders of the salient—the close support provided to the maneuver arms was absolutely essential to the ultimate triumph of the combined arms team. From the masses of US artillery banging away at the German spearhead from positions along the Elsenborn Ridge, to the infantry-tank-artillery teams doggedly clinging to each village and crossroad in front of Bastogne, the artillery played a primary role in this great American victory. Historian Cole summed up the feelings of many maneuver commanders when he recorded and commented on one regimental commander's tribute to his supporting artillery:

Throughout this entire action the [artillery] gave [us] such support as to elicit from the regimental commander the opinion that "it was the best artillery in the Army," an expression which would be used by other infantry commanders about other artillery

units during these trying days. In this case, as in many others...the full story is that of **cooperation** of the combined arms.

Close Support Lessons for the Modern Battlefield

In his foreword to the US Army Armor School's history of the Battle of the Bulge, General Bruce C. Clarke, wrote:

North Atlantic Treaty Organization troops are [now] along the Iron Curtain in Europe facing a Russian force that could launch another surprise attack like the Ardennes Offensive without buildup. If such should occur, the pattern of the battle could well follow this one...surprise, cutoff units, bad weather, short supply..., cut communications, loss of contact to right...left and...rear, and the other confusion of a modern, fluid battle.

For these reasons the study of this battle is of value....

The tactics, techniques, and lessons learned by the artillerymen of 1944 are clearly relevant to the efforts of today's Redleg on the modern battlefield. Some of the more obvious ones are well-worth reviewing.

● **Battery Self-Defense**—Field artillery units had to protect themselves during the fluid situation in the Ardennes. Batteries which could not defend themselves could not deliver effective supporting fires to the main battle. Successful defensive plans must integrate direct fire, all-around security, and all organic weapons. The assimilation of stragglers from other units proved an effective technique for strengthening battery defenses.

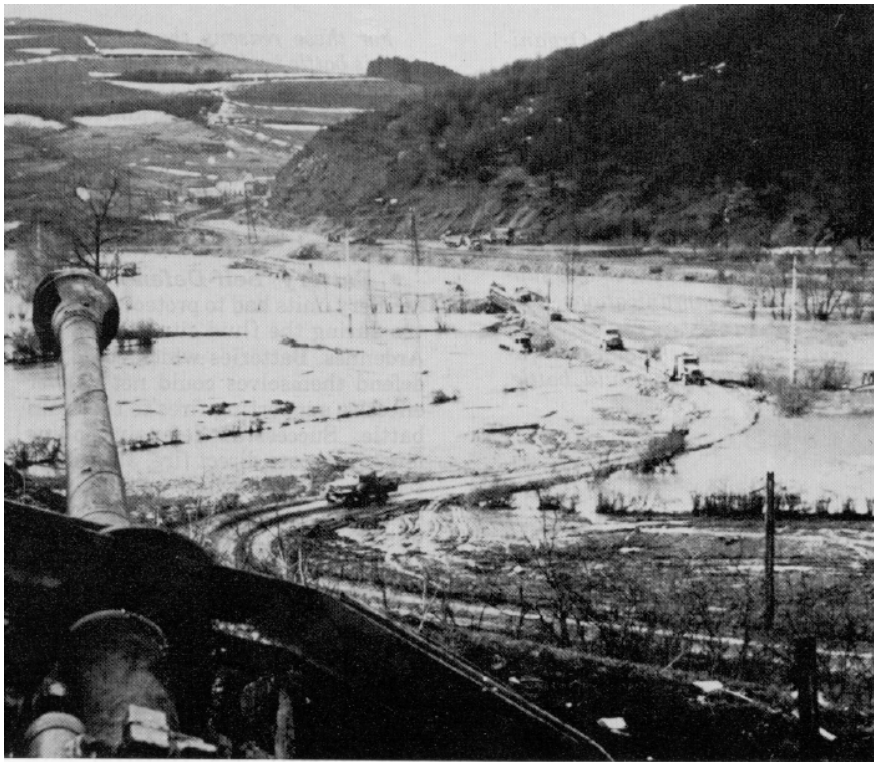
● **"March to the Sound of the Guns"**—Units like Clay's 275th Armored Field Artillery Battalion which chose to stay in the fight were crucial in turning the tide in the Ardennes. Effective leaders ensured unit integrity and cohesion, then placed their units in positions to continue delivering devastating close supporting fires. In the absence of clear-cut instructions from higher headquarters, artillery leaders attached their units to infantry or armor units because they understood combined arms doctrine and the commander's intent. The battle in the Ardennes aptly demonstrated that artillery cannot stay out of the battle for long if the total force confronts a competent, determined, and numerically superior foe.

● **Mission Flexibility**—Artillery leaders and fire support coordinators must ensure mission flexibility by remaining fully informed of the maneuver commander's concept of the operation and the overall intent of his scheme of maneuver. Only by being thoroughly involved in the planning process can artillerymen take the initiative, anticipate the maneuver commander's requirements, and provide continuous and effective close support critical to the overall success of the mission. Artillery units must be assigned missions which lend necessary weight to the main effort while retaining a flexibility which allows for a rapid and appropriate response to unforeseen threats. Throughout the confusion and uncertainty of the Battle of the Bulge, those artillery leaders who understood how to *slow* and *stop* the German advance were able to remain in the fight and continue to be effective. Those who did not were swept away.



Saint Vith after the battle.

September-October 1986



The typography of the Bulge—hills, forests, and rivers—challenged commanders at every turn. This photograph shows the Our River dividing Luxemburg and Germany.

- **Retrograde Techniques**—The units in front of Saint Vith and Bastogne which survived to continue providing close support were those which successfully executed the difficult maneuver of repositioning under heavy enemy pressure. Those units which did not were overrun or forced to abandon their equipment to the enemy. Displacement by echelon, continuous fire support, constant security, and effective close-in defense were all crucial elements to accomplishing retrograde operations. Such operations require coordination and rapid execution to be effective, but they also require prior thought before the battle begins to ensure each member of the artillery team knows what to do.

- **Restrict Enemy Mobility**—The "impenetrability" of the Ardennes region is largely due to its limited road network. The failure of the German assault resulted from the successful American efforts to deny the enemy use of this limited road system. Artillery is especially suited to accomplish this task, and at the four critical points on the battlefield they demonstrated it. Particularly noteworthy were the actions of the massed artillery units positioned along the Elsenborn Ridge. These batteries maintained an overwhelming torrent of fire on the few roads supporting the German main effort and stopped


the vanguard of the Sixth Panzer Army. Destroying the enemy's mobility will be a critical task for artillery close support in any similar, future situation.

- **Train Everyone to Fight**—A constant and uninterrupted flow of replacements simply will not occur in any action similar to the Ardennes Offensive. As a result, units will have to continue to provide effective close support with the soldiers at hand. This requires that every soldier be *trained, cross-trained, and retrained* to accomplish all the critical tasks necessary to ensure the timely delivery of fire support. During the Battle of the Bulge, artillery units frequently lost observer parties, gun crews, and even the entire battery fire direction center. Nevertheless, leaders quickly reconstituted these sections from existing resources and continued the fight. After the battle has begun it is too late to begin training for such events.

- **Communications**—Artillery radio nets proved time and again to be the salvation for many maneuver units during the Battle of the Bulge. An overreliance on wire communications during the static defense put many units in jeopardy when the German barrage cut most wire lines early in the battle. Although today's maneuver units possess more radios than their World War II counterparts, artillery units might well have to assist the supported maneuver commander by relaying critical information and instructions. Artillery leaders should train their units to handle extra radio traffic.

- **Logistics**—Even the most sophisticated artillery piece is useless if it has no ammunition. The Ardennes Offensive provided an excellent example of how difficult it will be to establish and maintain a flow of supplies on a fluid, shifting, confused, high-intensity battlefield. The use of prepositioned supply dumps, a constant "push" of supplies from rear areas, and the allocation of sufficient resources by commanders to ensure that supplies keep coming are all lessons that modern artillerymen can learn from the Ardennes fighting. The Redleg who ignores the demands of logistics *imperils* not only his own unit, but the *overall success* of the entire force as well.

Conclusion

All of these lessons deserve our thought and serious study if we seek to prepare ourselves to meet and *defeat* an attack similar in scope and intensity to the Battle of the Bulge. History is a great teacher only if we choose to study its lessons. The Redlegs who faced death in the forests of the Ardennes have bequeathed to us a legacy of close support doctrine, tactics, and techniques which we can study and adapt to today's battlefield. This legacy is a priceless gift, purchased with the blood and sweat of those brave gunners. Their sacrifices demand that we examine those lessons. To do less would be to prove ourselves unworthy. 

Major Jerry D. Morelock, FA, is assigned to the Leadership Division, Human Resources Directorate, Office of the Deputy Chief of Staff for Personnel, Washington, DC. He is a graduate of the United States Military Academy and has a master's degree from Purdue University. A graduate of the Command and General Staff College, Major Morelock has commanded artillery batteries at Fort Sill, Oklahoma, and in Vietnam.



by Captain John Gordon

The Gunners of Bastogne

As the 101st Airborne Division rolled into Bastogne on the morning of 19 December 1944, the news was all bad. Three days earlier the German Army had launched the super-secret operation code named "Wacht am Rhine." The objective of this massive offensive was the city of Antwerp on the English Channel. If the Germans could capture that key port, they would cut off the United States 9th Army and the entire British-Canadian 21st Army Group in Holland and northeast Belgium. Should the offensive succeed, the course of the war in the West would be completely transformed.



For the first week of "Wacht am Rhine," it was smiling grenadiers and worried GIs; but within 7 days, the roles would be reversed.

The Attack

In order to accomplish this ambitious scheme, the Wehrmacht had to penetrate very quickly the quiet 90-mile sector held by the United States 1st Army in the Ardennes Forest. Once the Germans achieved the breakthrough, they could race through the forest-lined roads of the Ardennes and cross the Meuse River, the last major terrain barrier in front of Antwerp. Three German Armies—the 6th Panzer, 5th Panzer, and the 7th Army— assembled in great secrecy to accomplish the task. They attacked together before dawn on 16 December.

By the morning of 19 December the 5th Panzer Army was behind schedule but gaining speed. The American units that had barred its path since the early morning hours of 16 December had been all but decimated. To the immediate front lay the largest town in the Ardennes—*Bastogne*, a vital road junction.

The Germans pushing toward Bastogne had been fortunate. The American armored and infantry battalions they had engaged had only minimal artillery support. In fact, bad weather, broken communications, and disintegrating command and control had reduced observation and close air support to virtually nil. Without adequate artillery support the widely separated American infantry units found it very difficult to stand on their own.

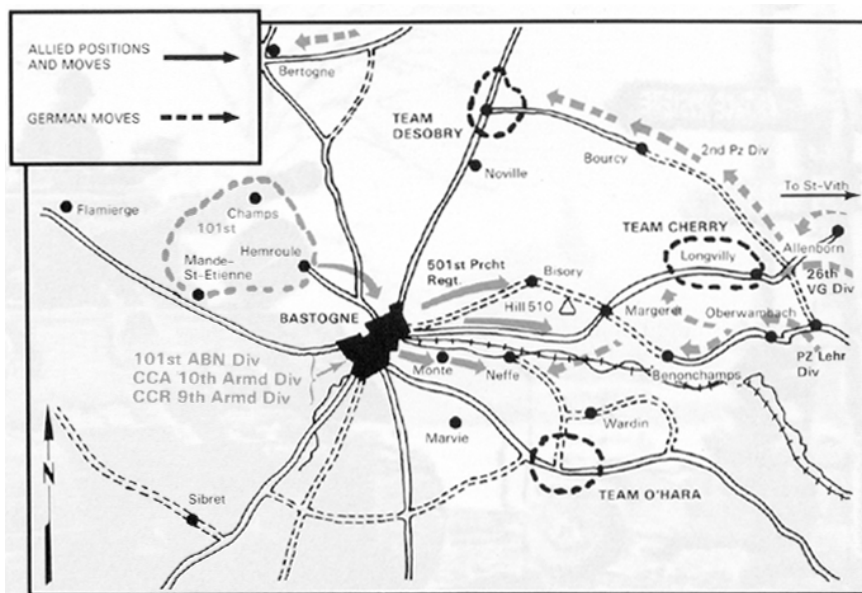
Sensing that he was close to a breakthrough, the 5th Panzer Army's commander, General Hasso von Manteuffel, urged his three panzer and one infantry divisions ahead. He judged that time was growing short; he was right.



The 5th Panzer Army's commander, GEN Hasso von Manteuffel.

The 101st Responds

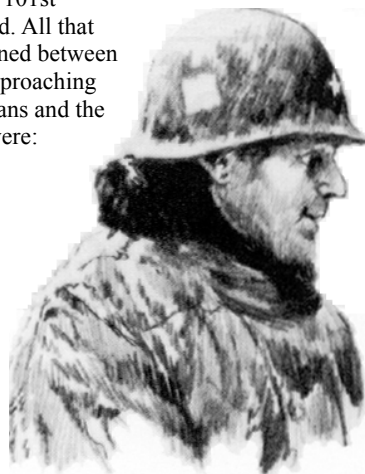
On 17 December, in the absence of his division commander, Brigadier General Anthony C. McAuliffe, the 101st Airborne Division Artillery Commander, became the man-of-the-hour.



The situation around Bastogne was fluid on the morning of 19 December 1944.

Responding to urgent instructions to move the division to Bastogne, he soon had his paratroopers on the road. But when McAuliffe finally reached Bastogne, he found the situation in town chaotic.

Prior to the German offensive, Bastogne had been the VIII Corps' Headquarters. Now the Corps was withdrawing westward as the 101st arrived. All that remained between the approaching Germans and the city were:



BG Anthony C. McAuliffe, the US Army's 101st Airborne Division Artillery Commander.

- Several poorly-armed VIII Corps engineer battalions, spread as a screen across the town's eastern approaches.

- The battered remnants of the 10th Armored Division's Combat Command B (CCB) and the 9th Armored Division's Combat Command Reserve (CCR).

After fighting a series of bitter roadblock battles to the east of Bastogne

over a 3-day period, both armored formations were greatly understrength in men and combat vehicles, and the situation on Bastogne's eastern flank was confused and fluid. McAuliffe responded immediately. He ordered his lead regiment, the 501st Airborne Infantry, to push eastward to develop the situation and expand his area of control. This move resulted in the first encounter between the 101st and the Germans during the "Battle of the Bulge."

The Panzer Lehr Division had been moving slowly but in the process had smashed most of the defending VIII Corps units. With the division commander in the lead, the vanguard of Panzer Lehr swung onto a hard surface road leading directly into Bastogne and headed toward the small village of Neffe. In the early hours of 19 December, they encountered elements of a battered American tank battalion (Team Cherry, CCB, 10th Armored Division) that delayed the attack long enough for the lead elements of the 501st to arrive. Supporting the paratroopers was one 105-mm battery from the 907th Glider Field Artillery Battalion. Soon these guns were in action and within an hour had inflicted over 80 casualties on Panzer Lehr. The airborne gunners had set up a mere 1,000 yards behind their infantry so their howitzers could easily be heard at the front. Indeed, the sharp crack of the 105s caused the German division commander to conclude that more American tanks had arrived, and he halted the attack.

As the day wore on, more troops of the 501st deployed along Bastogne's

eastern approaches. There they met other fresh troops of Panzer Lehr. As the bitter struggle continued, the 101st completed its deployment into the vicinity of Bastogne and prepared for battle. Fortunately for the 101st there was a considerable amount of artillery in the city by this time.

The Artillery of Bastogne

The 101st brought along its organic artillery—one 105-mm and three 75-mm field artillery battalions. Unfortunately, the division did not bring much ammunition; the order to move had come too quickly. There were also several other artillery units in the city.

- The artillery of CCB was in place on the east edge of Bastogne while CCRs had fallen back toward Bastogne as their tanks withdrew westward. The 420th Armored Field Artillery Battalion from CCB was intact, and reinforced by Battery B, 796th SPAAA Battalion. However, the 73d Armored Field Artillery Battalion from CCR had been hit hard and lost many guns.

- From the shattered 28th Infantry Division came the 105s of the 109th Field Artillery Battalion, less all the guns of one battery and two guns from another. Also from the 28th Division came the 969th Field Artillery Battalion armed with 155-mm howitzers.

- Two other corps 155-mm units were also around the city—the 771st and 755th Field Artillery Battalions.

The latter unit joined the 965th and 420th to form a groupment.

- Completing this assortment were individual gun sections and parts of batteries that escaped in front of the German advance. Attached to the intact battalions, these guns helped bring the reduced units back to or over strength.

- By the evening of 19 December, close to 130 guns and howitzers were in position around Bastogne. Under the 101st Division Artillery Headquarters, work progressed into the night to arrange a fire plan and establish communications with the tank, infantry, and engineer defenders ringing the town. Meanwhile, things were going badly to the north and south of Bastogne.

Dark Times

Despite the fact that the 501st had formed a firm shield to the east, a vacuum had developed to the south. There were almost no American troops for miles. To the north, Panzer Lehr's running mate, the 2d Panzer Division, had struck the town of Noville. Throughout 19 December and into the morning of the next day American tankers from CCB, plus reinforcements from the 506th Airborne Infantry, fended off the Germans. But finally the pressure became too great, and both American units withdrew toward Bastogne. The paratroopers had lost over 200 soldiers, and the armored task force lost

over 50 percent of its men and equipment. Unfortunately, Noville was beyond the reach of the Bastogne-based artillery battalions. With the fall of Noville, the 2d Panzer Division roared westward.

Fortunately, the center stood firm. On 20 December, Panzer Lehr tried again to storm Bastogne from the east. By then the paratroopers of the 501st could mass tremendous firepower. From all around the city, howitzers poured shells into the advancing Germans. The 902d Panzergrenadier Regiment reported severe casualties. The eastern flank of the city stood firm.

To the south and west things remained much less certain. McAuliffe slowly formed a defensive arc around the town, but it was not yet clear to the 101st that they needed to man a 360° perimeter. McAuliffe received no word from units to the north or south; the situation was becoming very tenuous. Furthermore, German units from the 26th Volksgrenadier Division were cutting the roads south of the city and swinging behind the 101st to the north. In fact, the 2d Panzer Division broke out on the night of 20 December and headed toward the Meuse River. Without deliberately trying to do so, the Germans were steadily encircling the city.

As this became apparent to the 101st's leaders, they took steps to spread the perimeter around to the west. But with only 12 battalions of infantry the line would be quite thin.

Surrounded!

By the evening of 20 December, virtually all the units that were to be part of the siege were around the city. All totalled some 18,000 men, including 11,500 soldiers of the 101st, were on the verge of being surrounded. The remnants of the two armored combat commands could muster only about 40 Sherman tanks. Everyone realized that the artillery would be critical to their survival, and it would be called upon to support the entire perimeter.

Unfortunately, the defenders continued to be short of ammunition, and the overland resupply routes were frequently impassable. The airborne 75-mm pack howitzers were in the worst shape. All units rationed their firing. But this was not the toughest problem. Just as the siege began, the artillery suffered a bitter blow.

After skirting south of the Bastogne perimeter, the German 26th Reconnaissance Battalion drove off a small American contingent from Sibret



The crew of a 105-mm battery from the 907th Glider Field Artillery Battalion provide support to US Army paratroopers.

early on 21 December. The Germans then turned northeast and headed toward Bastogne. Because the perimeter around the city was not yet fully manned, there were sections of "front" with no infantry manning the line. The Germans advanced through one of those holes and in short order came upon the 771st Field Artillery Battalion, just as the American gunners were limbering their guns up to prime movers for a displacement. The battle that developed was no contest. Fleeing, the gunners ran to the north, and abandoned some of their vehicles with the engines still running. Every gun in the battalion was lost. In one stroke, the Germans had destroyed an entire 155-mm battalion.

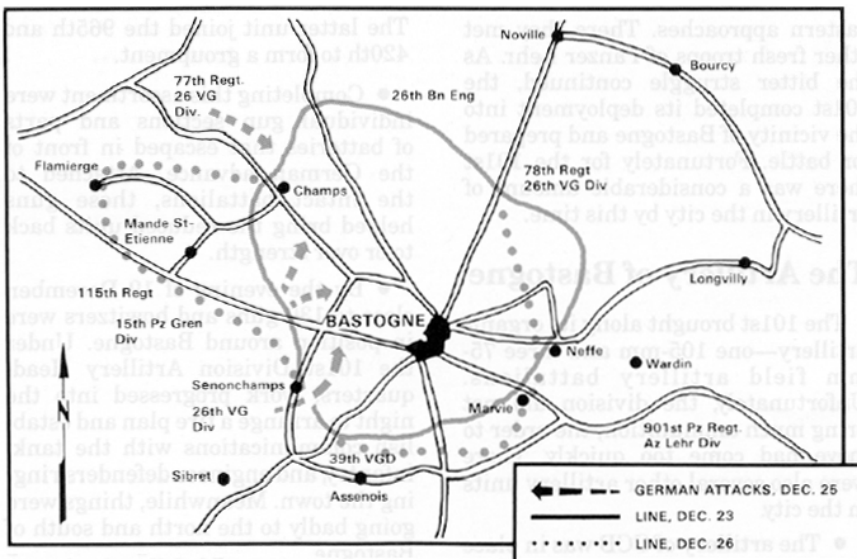
Flushed with their success, the German reconnaissance battalion continued toward Senonchamps. Fortunately, Lieutenant Colonel Berry D. Browne, the 420th commander remained calm and promptly called for help. Then he realized that his unit as well as the 755th and the 969th were in harm's way. As the Germans approached, the towed 155 mm gunners prepared to move inside the line held by the 420th. But roaring to their aid came a scratch force from the remnants of the 9th Armored Division's CCR Team Pyle composed of some 200 infantrymen and 14 tanks.

Team Pyle fought hard but could only slow the Germans. While the howitzers were pulling out, German half-tracks arrived and opened fire. Battery A of the 755th and the Headquarters of the 969th put up such a tremendous machine gun barrage that the enemy halted. Only one howitzer was lost as the two precious 155-mm battalions escaped.

By the evening of 21 December the staff of the 101st realized that they were cut off by elements of three German divisions. Clearly, the worst was yet to come.

The German Perspective

The local German corps commander was not without problems. His primary mission was to get across the Meuse and on to Antwerp, and he was already badly behind schedule. Bastogne, however, stood astride the German main lines of communications. The German commander bypassed the city; but to keep his operation going he had to tie down many precious troops—the 26th Volksgrenadier Division and one regimental-sized battle group from Panzer Lehr to encircle the defenders—as the remainder of the



The perimeter at Bastogne changed with the ebb and flow of battle from 23 to 26 December.

German forces headed west along lengthy secondary routes around the city.

The Germans also had fire support problems. Despite the decision to leave behind many of the Corps and Army-level artillery units that had supported the initial attack on 16 December, the poor roads leading to Bastogne caused enormous traffic jams. The 26th Volksgrenadier Division found itself in the unenviable situation of having less combat power than the force it was tasked to encircle and destroy.

The realization that it would be in for a tough fight might have prompted the German commander to send a party of officers to the Bastogne perimeter at noon on 22 December to demand the surrender of Bastogne. This party threatened massive bombardment by guns that were not yet in the area. General McAuliffe's famous reply—"Nuts!"—has gone down in history.

The Battle Continues

Throughout 22 December the 420th Armored Field Artillery and Team Pyle fought off the Germans. The Shermans protecting the artillery knocked out 18 German tanks and assault guns, but by late afternoon snow reduced the ability of the tankers to locate targets. On the other hand, the snow silhouetted the American guns and the Germans began a heavy counterfire. At dusk the 420th reported "terrible casualties," but it held its ground.

More bad news awaited the American artillery. Trapped to the west of the Bastogne perimeter were the eight remaining howitzers of the 58th Armored Field Artillery Battalion. From its isolated defensive position near Tillet, the Battalion tried to fight its way into the 101st lines. They were unsuccessful. Strong elements of Panzer Lehr stopped them and drove them back to their foxholes. Finally, with only one howitzer remaining, the battalion commander broke his unit into small groups which escaped into the woods. There were now no American units outside the Bastogne perimeter for many miles in all directions.

Inside Bastogne, gunners were taking stock. They had fired a tremendous amount of ammunition on 20, 21, and 22 December. But now that the city was cut off, they could not allow such prolific expenditures. Colonel Sherburne, the Acting Division Artillery Commander, reported to McAuliffe that all of the 75-mm battalions were down to less than 200 rounds each. He also noted that the corps 155-mm battalions were running very short of ammunition. Unless the 101st could link up with outside reinforcements or get an airdrop, Sherburne intended to impose a 10-round per tube per day restriction. At this point no one could tell how long the siege could last. Already an airdrop for that very day had been cancelled due to a snowstorm. McAuliffe had to begin thinking of more drastic measures.

On 23 December the Americans beat off another attack on the southwestern sector of the perimeter. But of

An Abbreviated Combat Log of the 420th Armored Field Artillery Battalion

by William A. Yeisley, Jr., Battalion Operations Sergeant of World War II

12-16 Dec 44

Wettingen, Germany; in support of 695th Armored FA Battalion in action against enemy. Loaded up with new poziffuse ammunition.

17 Dec 44

As part of CCB, 10th Armored Division marched to Cossingen, Luxembourg; told we were in Corps Reserve.

18 Dec 44

1000 hours—no longer in Corps Reserve. 1100 hours—On the road north to a place chosen on map. 1500 hours—Informed said location was overrun by enemy. Then occupied an alternate position east of Bastogne. CCB sent out three task forces. Foggy weather and dark night.

19-20 Dec 44

Two columns of CCB task forces were cut off by enemy action. Infantry and bazooka squads were formed by 420th for defense of battalion positions. CCB battled 8 hours before first reinforcements from 101st Airborne Division arrived. With artillery support, all three task force groups were able to return and set up another defense line with minimal losses. Fired 61

missions using 3,508 rounds of 105-mm ammunition. Germans were frustrated on their frontal attack.

20 Dec 44

Battalion displaced by echelon to vicinity of Senonchamps 2 1/2 miles west of Bastogne to protect 1,800 mil sector north, west, and south of the area. Continued to support CCB of 10th Armored Division and 101st Airborne Division activities in spite of heavy enemy mortar and artillery fire. Picked up numerous stragglers and gave them food, clothing, and weapons to use while outposting our positions. The 327th Glider Infantry Regiment came to assist in outposting and to take over infantry positions from the 420th.

21 Dec 44

This morning found enemy completely surrounding Bastogne and 420th was maneuvered to fire a 360° perimeter by breaking firing batteries into two-gun platoons pointing in different directions so fire could be handled in any sector on call. The type of target would determine how many guns would be in the fire for effect. Ammunition was rationed to fire one-half the number of rounds fired the previous day.

22 Dec 44

Enemy attacked violently from the west and was repulsed after coming within 300 yards of the battalion's command post. Battery A destroyed several personnel carriers and Mark IV tanks belonging to the enemy with direct fire. Firing batteries had to relocate because of heavy enemy mortar and artillery operations. An attack from the south was broken with one of the six-gun batteries firing direct fire on approaching enemy.

23 Dec 44

One tank and two infantry attacks were repulsed in the western sector even while we were being subjected to enemy mortar and artillery fire day and night. Message out to hold 5 rounds of ammunition in case of being overrun. Since 20 Dec 44, the Battalion has expended 4,246 rounds of 105-mm ammunition on 145 fire missions.

24 Dec 44

Following plan to shorten lines, 420th took position 1 1/2 miles west of Bastogne. In spite of heavy enemy fires, move was orderly. Christmas Eve Bastogne was bombed with some "shorts" hitting Battalion positions causing little damage. No night firing of planes to give tracer identification of positions.

25 Dec 44

Enemy fighters strafed battery positions and heavy mortar and artillery fire was sustained during the day. Direct fire on enemy tanks and infantry was necessary. All but one tank were eliminated.

26 Dec 44

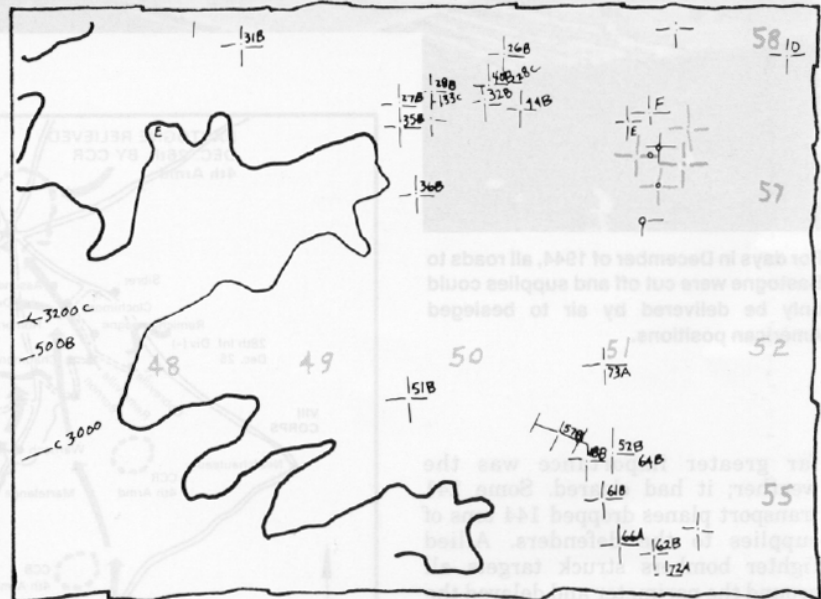
Fired on enemy units occupying path for incoming parachuted supplies. Men rushed to get 1,050 rounds of 105-mm first and then other food, medical, and grenade supplies. With clear weather marked targets for friendly air strikes by using red smoke shells.

27 Dec 44

Enemy action with artillery and mortar continues. Fired at enemy artillery positions to clear the path for incoming parachute supplies. 4th Armored Division broke through the enemy's ring opening up supply lines again.

1-17 Jan 45

Continued artillery fire to support our troops in a see-saw battle around Bastogne while receiving some night bombing and day and night artillery and mortar fire from enemy. We held our ground. At 1200 hours on 17 January 1945 "march order" heading south, relieved of duty in Bastogne.



Personnel Losses: 1 battalion commander, 1 battery commander, 1 liaison pilot, 2 forward observers, 1 reconnaissance officer, and 60 enlisted men.

Equipment Lost: 2 tanks, 2 half-tracks, 1 M7, and 1 jeep.

Recognition: The 420th Armored Field Artillery Battalion of the 10th Armored Division was awarded a Unit Citation for actions at Bastogne.



For days in December of 1944, all roads to Bastogne were cut off and supplies could only be delivered by air to besieged American positions.

far greater importance was the weather; it had cleared. Some 241 transport planes dropped 144 tons of supplies to the defenders. Allied fighter bombers struck targets all around the perimeter and delayed the progress of approaching German reinforcements. Although the Germans did succeed in pushing back the 101st in the southern portion of the perimeter, the attackers paid dearly in men and equipment. The 26th Volksgrenadier Division was by now so depleted that it had to have reinforcements

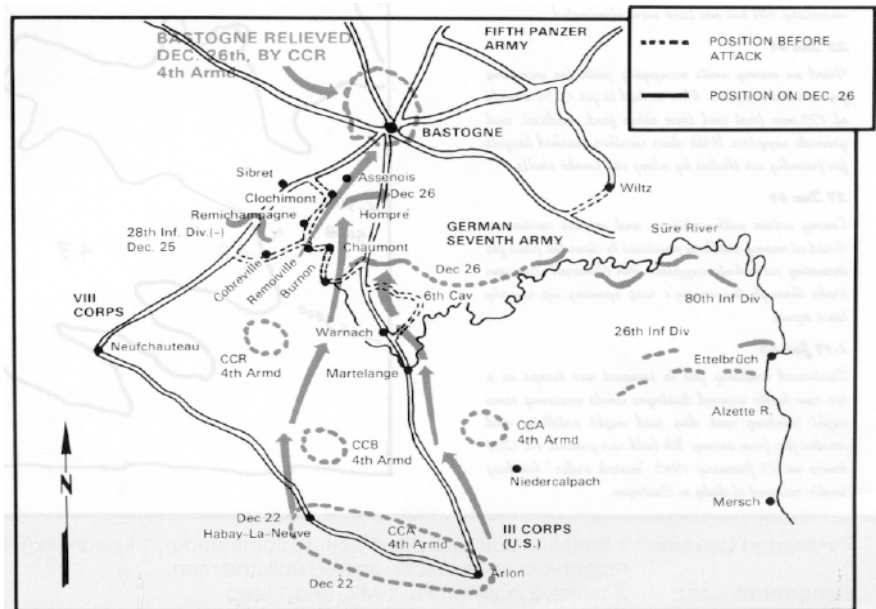
if it was to have any hope of penetrating the 101st's lines.

December 24th proved another day of clear weather, and both sides used the day to prepare. The garrison received more aerial resupply and adjusted the positioning of units around the perimeter. But the best news on Christmas Eve was that the veteran 4th Armored Division was approaching from the south to relieve the city.

Nevertheless, everyone knew the Germans would be back. The defenders could see German units redeploying outside the perimeter, and the shortage of artillery ammunition prevented anything more serious than minor harassing fire. However, the 420th Armored Field Artillery had several successes and saved vital ammunition by passing fire missions to units within range coming up from the south with the relief force.

A Battle on Christmas Day

On Christmas Eve, German bombers raided Bastogne killing civilians and a number of troops, including battery commanders of Battery B, 333d Field Artillery Battalion, and Battery A, 969th Field Artillery Battalion along with several other soldiers manning a joint command post.



At 1650 hours on 26 December, elements of the 4th Armored Division reached the outposts of the Bastogne perimeter.

Meanwhile, the newly arrived 115th Panzergrenadier Regiment prepared to attack. With the 4th Armored Division approaching, the Germans had to move fast if they were to take the city.

At 0300 hours on Christmas morning, the Germans charged forward. Supported by artillery, the panzergrenadiers pierced the American paratrooper's line near the town of Champs where heavy fighting broke out. Meanwhile, another German battalion, led by 18 panzers, penetrated the front of the 327th Glider Infantry Regiment and drove forward.

It was still dark as the gunners of the 755th Field Artillery heard tanks approaching. The gunners opened fire with machine guns as soon as the enemy came in sight, but their 155s proved too cumbersome to be traversed quickly. Fortunately for the artillerymen, the panzers—their decks packed with panzergrenadiers—swept past rather than attacking the gun positions.

After passing by the artillery, the German force split into two groups. One element of 11 tanks attempted to assault the village of Hermroulle, barely a mile from Bastogne. By now the German battalion was deep inside the American perimeter where it took fire from tanks, tank destroyers, the 75s of the 463d Parachute Field Artillery Battalion, and the self-propelled 105s of the 420th Armored Field Artillery Battalion. In a wild firefight, the defenders knocked out all but one German tank and killed or captured most of the accompanying infantry. It was a close call, but the Americans stopped the Germans cold!



Heavy artillery support from four battalions of 155-mm howitzers tipped the scales in favor of LTC Abrams' task force.


The Final Hours

December 26 brought an unusual calm. Certainly, the Germans had received a heavy blow on Christmas Day; but they maintained powerful enemy forces around the city. Despite the aerial resupply, ammunition remained critically short, and everyone wondered when the Germans would strike again.

There was good reason for the lack of enemy activity. The local German commander knew that the US 4th Armored Division was a mere 5 miles south of the Bastogne perimeter. He deployed more and more of his scarce troops to block the roads leading toward the city. For several days there had been savage battles with heavy

losses in the tiny villages bestride the highway from Luxembourg to Bastogne. That evening the dam finally broke.

At 1650 hours the leading tanks of the 37th Tank Battalion, CCR, 4th Armored Division, commanded by Lieutenant Colonel Creighton W. Abrams, reached the outposts of the 326th Airborne Engineer Battalion on the south edge of the Bastogne perimeter. Abrams owed his success to the heavy artillery support his task force received from four battalions of 155s. With the arrival of the 37th, the Americans had established a narrow corridor into the Bastogne perimeter, and in the days ahead that corridor would widen. The siege was over, although the battle continued for several weeks.

During the battle, Bastogne's gallant defenders suffered roughly 3,000 casualties; a high proportion of whom were artillerymen. Nevertheless, the Gunners of Bastogne had contributed tremendously to one of the most acclaimed defensive battles the US Army has ever fought. 



LTC Creighton W. Abrams radios instructions during the 37th Tank Battalion's drive on Bastogne.

Captain John Gordon, FA, is Chief of Marketing Branch, Headquarters 5th Recruiting Brigade at Fort Sam Houston, Texas. He received his commission through ROTC at the Citadel and is a graduate of the Field Artillery Officer Basic and Advanced Courses. His past assignments include fire support team chief with the 82d Airborne Division, G3 with the 2d Infantry Division, and battery commander at Fort Sill, Oklahoma.

Play a Role on History's Silver Screen—Read the *Journal*

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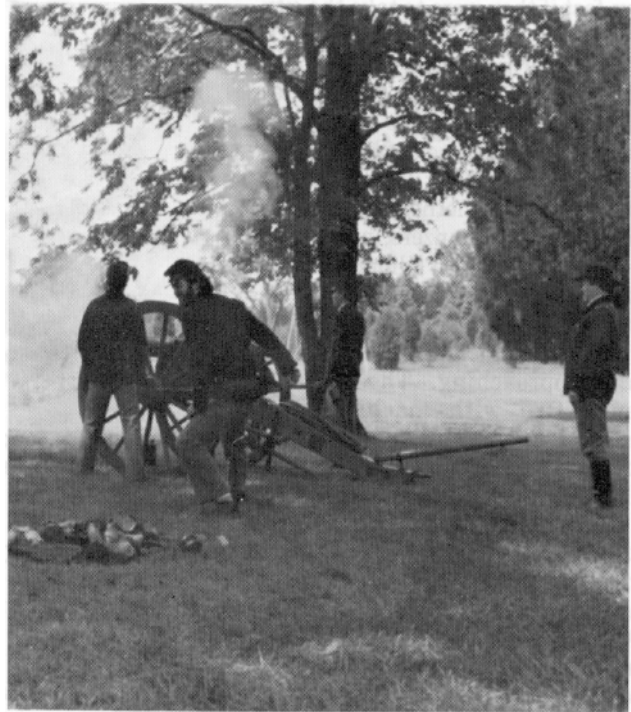
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Fragments

FROM COMRADES IN ARMS

The Proof is in the Testing

Proof firing is just one of many techniques the Army uses to evaluate the ability of artillery weapons to do the job on future battlefields. Today several types of field artillery systems are undergoing proof testing at Aberdeen Proving Ground, Maryland. These include the M198 155-mm howitzer, the M109A2 155-mm self-propelled howitzer, the M110 8-inch self-propelled howitzer, and the M102 105-mm howitzer.

Artillery proof testing at Aberdeen begins with the arrival of gun tubes from the Army's arsenal at Watervliet, New York, or from a commercial contractor. In a building devoted entirely to weapon processing, crews of experts unpack, inspect, and prepare the tubes for shipment to the proof firing range.

Using flatbed trailers, the Proving Ground workers haul the gun tubes to a firing barricade where another group of experts put each gun tube into a field mount. For the M109A2 howitzer, the cannon assembly weighs nearly 7,000 pounds; yet skilled crane operators and proof firing crews can unload, mount, fire, dismount, and return a cannon assembly to the trailer in under 20 minutes.

During the proof firing process, the experts use special charges, prepared under the supervision of



Under the supervision of proof firing team leader, George Hoffman, crew members carefully move a cannon into position for proof firing.

the test director. Each charge generates pressures about 13 percent greater than those generated by a maximum service charge. Each powder charge contains two copper crusher pressure gauges. After they fire the cannon, the test crewmen recover the gauges which contain tiny copper balls. Using calipers and a micrometer, they measure the degree of deformation of the copper spheres and compare the results with tables to determine the percentage of overpressure achieved during proof firing.

Once the cannon assembly has been proof fired successfully, it goes to the special inspection facility. There, yet another team breaks down the breech assembly and inspects it. They also do a special magnetic particle inspection to detect cracks or damage. During this test, the crew puts the breech components into an electrically charged bath of oil and iron filings. When viewed under an ultraviolet light, filings which penetrate into cracks or other damaged areas show up clearly.

Once reassembled and painted, the gun tubes and breech assemblies receive one final inspection before they begin the long journey to howitzer production facilities or to a storage depot. (Story and photos by Bob Lessels)



A test crewman uses a power tool to tighten the bolts which hold an M109 cannon assembly on the firing trunnions. The crew needs only 20 minutes to unload a cannon assembly from its flatbed trailer, mount the gun in an M109 turret, proof fire the weapon, dismount the entire assembly, and return it to its pallet on the tractor-trailer.

More Eyes in the Sky

Rising concerns over both the vulnerability of manned aircraft and the need to see deep on the battlefield have given impetus to the Army's unmanned aerial vehicles (UAV) program. Today's commanders particularly need real-time combat information intelligence about the enemy's second echelon forces. A survivable "family of UAVs" may well satisfy that and many other requirements in the future.

The US Army Intelligence Center and School (USAICS) has identified a specific need for an unmanned aerial vehicle at the corps and echelons above corps levels. The requirement transcends and complements the role of the

Aquila remotely piloted vehicle. The proposed intelligence and electronic warfare UAV will be a platform with substantial payload, range, altitude, and loiter time capabilities. Missions for such a vehicle would include reconnaissance and surveillance, radio relay, signal intelligence collection, electronic warfare, obstacle detection, and meteorological data collection.

Unmanned aerial vehicles can serve as a force multiplier. To realize their full potential, the Army needs a mix of systems to meet varied requirements and threats. USAICS, as the Army's proponent for UAVs, is moving forward in providing commanders a family of systems that will satisfy many of their battlefield needs.

Nuke News

Field Circular 50-10, *Soldier Dimensions on the Nuclear Battlefield*, tells commanders from battery to corps level about how their units may have to operate in a nuclear environment. It also provides doctrine writers, instructors, and training developers a ready reference concerning nuclear weapons, their use, and effects on the AirLand Battlefield.

In realizing these ambitious objectives, the circular exploits an unusual approach by describing a nuclear battlefield told through the experiences of three soldiers—Carter, Baker, and Adams—during the first hour following a nearby nuclear explosion.

Carter is talking on the radio to the battery operations center when his set goes dead. A blinding flash of light illuminates the sky, and an intense wave of heat passes

over his foxhole. The subsiding heat gives way to the crackle of flames and then a violent sonic boom splits the air. At the end of 5 seconds the wind stops, but dust fills the air. Carter emerges from his foxhole and sees soldiers dead, dying, or dazed. His battery equipment is smoldering and overturned. He has received 50 centigray (rads) of prompt radiation.

Baker's foxhole is a half a kilometer closer to the burst than Carter's. His experiences are about the same as Carter's, but the free-field weapon effects at Baker's foxhole are 650 centigray (rads) and the dynamic pressure of winds traveling at 210 miles per hour cause a 165 pound soldier standing in the next foxhole to fly through the air at 25 feet per second.

Adams' foxhole is only 1,275 meters southeast of ground zero. He is temporarily blinded and his uniform is heavily scorched but does not ignite. The

blast slams Adams against the side of the foxhole and he emerges to hear someone say the firing battery dosimeter is pegged at 600 centigray (rads).

The circular goes on to describe in nontechnical language the stress and medical problems which each soldier may face and the challenges unit leaders will confront. Field Circular 50-10 went to the field in January.

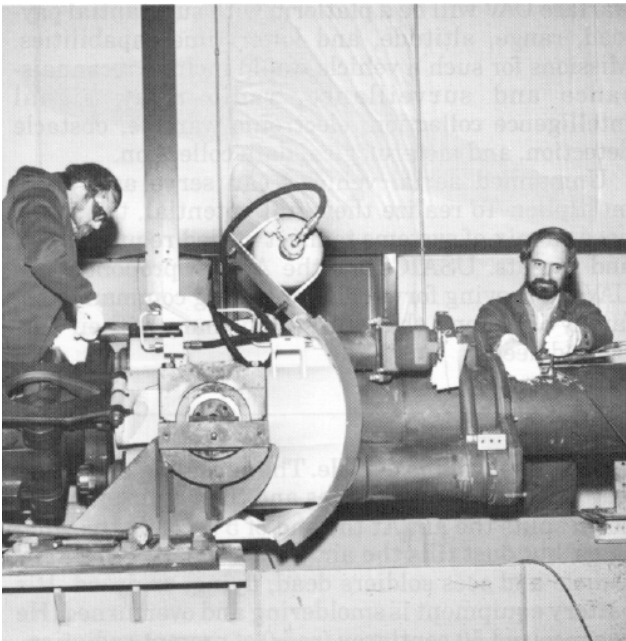


Cover Up!

American troops recently used a new "pocket sized" camouflage during Exercise Team Spirit 85 in Korea.

Developed by the Army Troop Support Command's Belvoir Research and Development Center, the individual concealment cover (ICC) is a solid-colored, 5-foot by 7-foot net made of incised, coated nylon. Each unit weighs less than a pound and folds to fit into the pocket of a soldier's uniform. Soldiers can put individual nets together to form a larger cover.

At the request of the 9th Infantry Division and the Army Development and Employment Agency (ADEA) the Army is developing ICC under a quick response program.



A Gymnasticator in Action

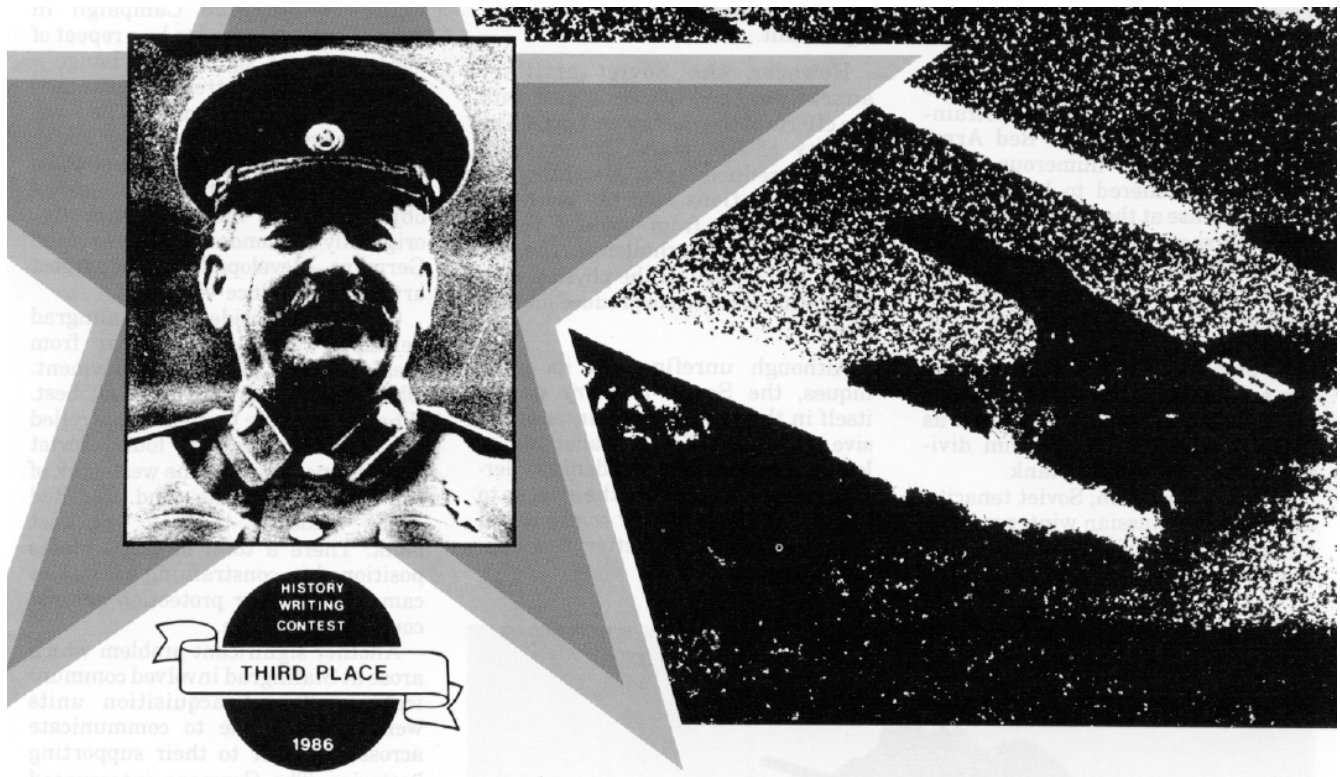
Rock Island Arsenal is saving the government millions of dollars by using simulated firings to test various tank and howitzer gun mounts. According to Jerry Hansen, chief of the Arsenal's Product Engineering Test branch, plans also call for additional savings of between one and two million dollars in future years.

The savings come from the use of powder and hydraulic gymnasticators that simulate the force of live fire testing. The powder gymnasticator uses a 75-mm shell that is loaded with a charge which imparts a force on the gun mount similar to that experienced in an actual firing. Using hydraulic fluid to drive the barrel into recoil, the hydraulic gymnasticator simulates the same motion, but it is considerably quieter. "It makes the gun think it has fired a live round without the expense of using ammunition," points out Hansen.

The use of a simulator saves the Army the expense of shipping gun mounts to a proving range, the costs associated with operating a range that tests howitzers capable of shooting 18 miles, and the price of the ammunition. Furthermore, if the gun mounts prove to be faulty, they can be returned to the Arsenal shops for repairs, avoiding costly transportation charges between Rock Island Arsenal and Aberdeen Proving Ground, Maryland.

Not only does simulation achieve cost savings, but also achieves another valuable advantage over live fire testing by accumulating important data. Sophisticated sensing devices can record data on between five and eight different technical operations. Results of the tests go directly into a computer network which produces detailed reports that become part of the quality assurance package associated with each gun mount.

In previous years experts thought satisfactory results were only attainable from live fire testing. Today, they see simulated testing as an excellent, cost effective alternative.



The Soviet Showdown:

A Doctrinal Lesson We Can't Ignore

by First Lieutenant Richard A. Lechowich

The field artillery will play a vital role in close support of the maneuver arms on virtually any future battlefield, but it won't be an easy job. The history of the Arab-Israeli wars clearly shows that tomorrow's battles will be extremely lethal. America's most probable enemy in any such war will be the Soviet Union or one of Russia's client states using Soviet doctrine. The military leaders of these countries have studied the experiences of World War II and based their doctrine on their analyses. The Soviets plan to mass fires to pin down the enemy and then maneuver to achieve victory.

Early Doctrine and Early Problems

Today's Soviet doctrine relies heavily

on military thinking which emerged between the two World Wars and the Red Army's experiences on the Eastern Front during the Great Patriotic War.

For example, the idea of the deep battle first appeared in Soviet doctrine around 1921. However, inadequate materiel and training prevented the concept's immediate implementation. It was not until the military build-up under the first 5-year plan that these seminal ideas began to be practiced. Artillery, Stalin's "god of war," soon appeared in massive numbers; but it never achieved its full potential. The purges of the Soviet officer corps in 1937-38 left the Red Army essentially leader-less even as it moved toward the 1939-40 confrontation in Finland.

The Soviet territorial claims on Finland that had existed since czarist times erupted into a full-scale war in 1939. The

Finns conducted a brilliant defense, but overwhelming Soviet numbers eventually forced a Finnish defeat. At first, the Soviets attempted to practice their doctrine of attacking on a broad front. But several initial failures prompted them to concentrate huge numbers of men and supplies outside of Leningrad to crush the main Finnish line. At some points along the front, artillery leaders massed 400 pieces into an 800 meter area. Against these numbers the Finns eventually gave way, ceding what was originally demanded by the Soviets. However, the cost in Soviet blood and lost equipment was stunning: 200,000 dead as well as 1,000 aircraft and 2,300 tanks destroyed.

Even the calloused Stalin could not ignore the doctrinal weaknesses manifest in the "Winter War." He realized that both his officer corps and troops

needed better training and that Soviet fire support concepts needed significant improvement. Grudgingly, he gave his generals more doctrinal leeway, and he accelerated the development of fire support procedures and equipment.

While Stalin attempted to appease Hitler throughout 1940, the retraining and rearming of the Red Army continued. Despite numerous warnings, Stalin adhered to his original plan of defense at the frontier and consequently sacrificed huge forces to the German blitzkrieg in 1941. Despite these staggering losses the Soviets managed to evacuate much of their industrial base east to the Urals. Mass production began on such weapons as the M-31 Katyusha multiple rocket launcher sometimes known as "Stalin's Organ," the 76.2-mm divisional gun, and the T-34 tank.

German indecision, Soviet tenacity, and the bitter Russian winter eventually ground the Axis advance to a halt short of its 1941 objectives. In fact, the

German drive stalled just outside of Moscow, and the Soviets soon counterattacked using new formations and weapons. The psychological effect of the Katyushas proved particularly significant.

However, the Soviet artillery attacks were poorly coordinated with the efforts of the maneuver forces. The rigidity of fire plans, for example, greatly reduced the flexibility of Soviet operations, and the ability to converge fires from various points proved too great a challenge. The Red Army had to rely on the physical concentration of pieces to produce massed fires.

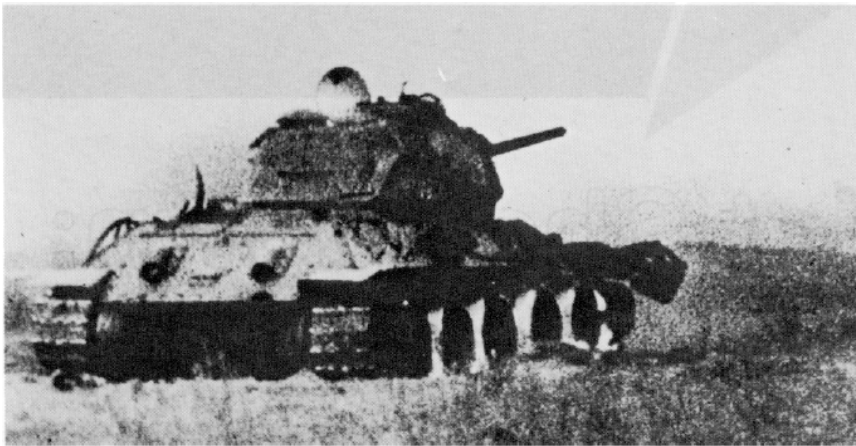
Although unrefined in its techniques, the Soviet artillery proved itself in the subsequent winter offensive. But inept Soviet leadership at lower echelons and hardening German resistance brought the attacks to a halt. The Soviets now confronted a situation requiring better fire support doctrine.

Maturing Doctrine and Bloody Battles

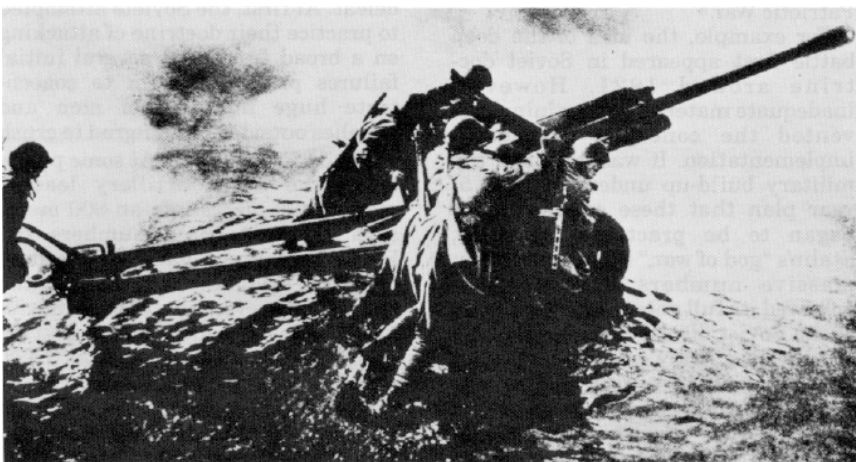
As the Germans began the Caucasus-Stalingrad Campaign in June of 1942, it looked to be a repeat of 1941 with one significant change—there was no long stream of prisoners marching back to Germany. The Soviets managed a skillful, destructive withdrawal and eventually stopped the Germans short of the latter's objectives. In fact, Stalingrad—originally a secondary objective of the Germans—developed into the largest artillery duel since Verdun.

Conditions inside the Stalingrad perimeter were certainly far from ideal for Soviet artillery employment. Observation was difficult at best. What's more, the Germans controlled the skies. Mid-October found Soviet artillery positions on the west bank of the Volga untenable, and the Red Army withdrew them to the east bank. There a total of 1,200 pieces positioned in constraining casemates came together for protection against counterbattery fire.

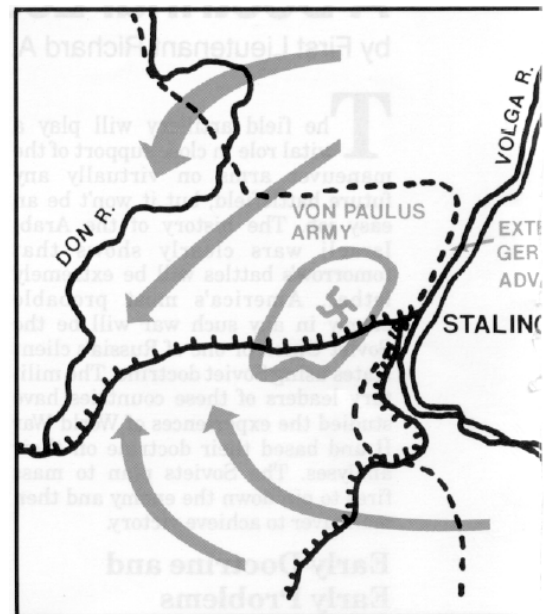
Another significant problem which arose at Stalingrad involved communications. Target acquisition units were often unable to communicate across the river to their supporting batteries. The Germans interrupted FM and AM networks, cut underwater telephone lines, and shot couriers. But experience is inevitably a first-rate teacher, and the Soviets overcame all these problems.



The T-34 tank became a centerpiece in the Red Army arsenal.



Soviet artillerymen manhandle their 76.2-mm field gun into position.



Employing lessons learned over 2 years of hard fighting, the Soviets encircled von Paulus' Sixth Army.

With the German Sixth Army boiling in the cauldron of Stalingrad, the Soviets refocused their efforts on the ill-equipped Axis forces securing the Sixth Army's flanks. Employing the lessons learned over the 2 past years, they massed for the assault. On 19 November 1942, an hour-and-a-half long preparation shook two Axis armies to their cores. Tube artillery fired primarily on opposing artillery and antitank weapons while the Katyushas concentrated on the Axis infantry. When the fires lifted and the assault began, the Rumanian forces broke and ran. Massed fires had broken both their defenses and their wills. The Soviets now had an opportunity to maneuver in depth. Within 3 days, they encircled the Sixth Army. All subsequent Axis attempts at breakout proved futile.

The destruction of the German Sixth Army precipitated a general withdrawal along the Eastern Front. The Germans now desperately counterattacked to stop the Soviet advance, but they faced a growing Soviet combined arms machine.

A Final Doctrine and Ultimate Victory

Artillery was a major part of the emerging Soviet arsenal. For example, a total of 26 artillery divisions were in the field by late 1943. In the attack, these units massed their fires and literally blew a hole in the German lines through which tank-infantry teams could roll.

Now caught in a deadly two-front war, the Germans needed to defeat at least one of their opponents. And the Axis leaders believed Operation Citadel would bring about a decision in the East. Under this scheme German reserves armed with the new Tiger and Panther tanks, Ferdinand assault guns, and 20,000 pieces of assorted artillery attacked to pinch off the Kursk salient and trap a major portion of the Soviet Army.

But mechanical difficulties with the new tanks delayed the attack by 2 months, and during this time the Soviet intelligence system deduced the German plan of operations and constructed defenses of tremendous strength and depth. On the northern front of the salient, the Soviets laid thousands of antitank and antipersonnel mines, dug thousands of miles of tank ditches, and built massive field fortifications. The resulting six-lined defensive network was approximately 90 kilometers deep and featured massed antitank guns controlled by a single officer.



The Soviets decisively defeated the Germans at Kursk.

But the keystone of the defense was indirect fire. The Soviet plan was to use their artillery to interdict German movement and destroy the attackers. At Kursk the Soviets sought to solve their target acquisition and communications problems by building fortified observation posts and burying wire lines. Furthermore, the artillery batteries operated as groups under the control of one fire direction center. This allowed quicker response and massed fires in sector.


The overall Soviet defensive concept at Kursk was simple—contest every inch of ground. The defensive network was supported by approximately 35 pieces of artillery, mortars, and antitank guns per kilometer of front. When the Germans attacked, the Soviet artillery not only separated the assaulting infantry from its armor but also kept Axis artillery under constant counterbattery fire. Excellent intelligence combined with firepower superiority resulted in a bloody German defeat. The following Soviet counteroffensive gave the Red Army the initiative for the rest of the war.

Conclusion

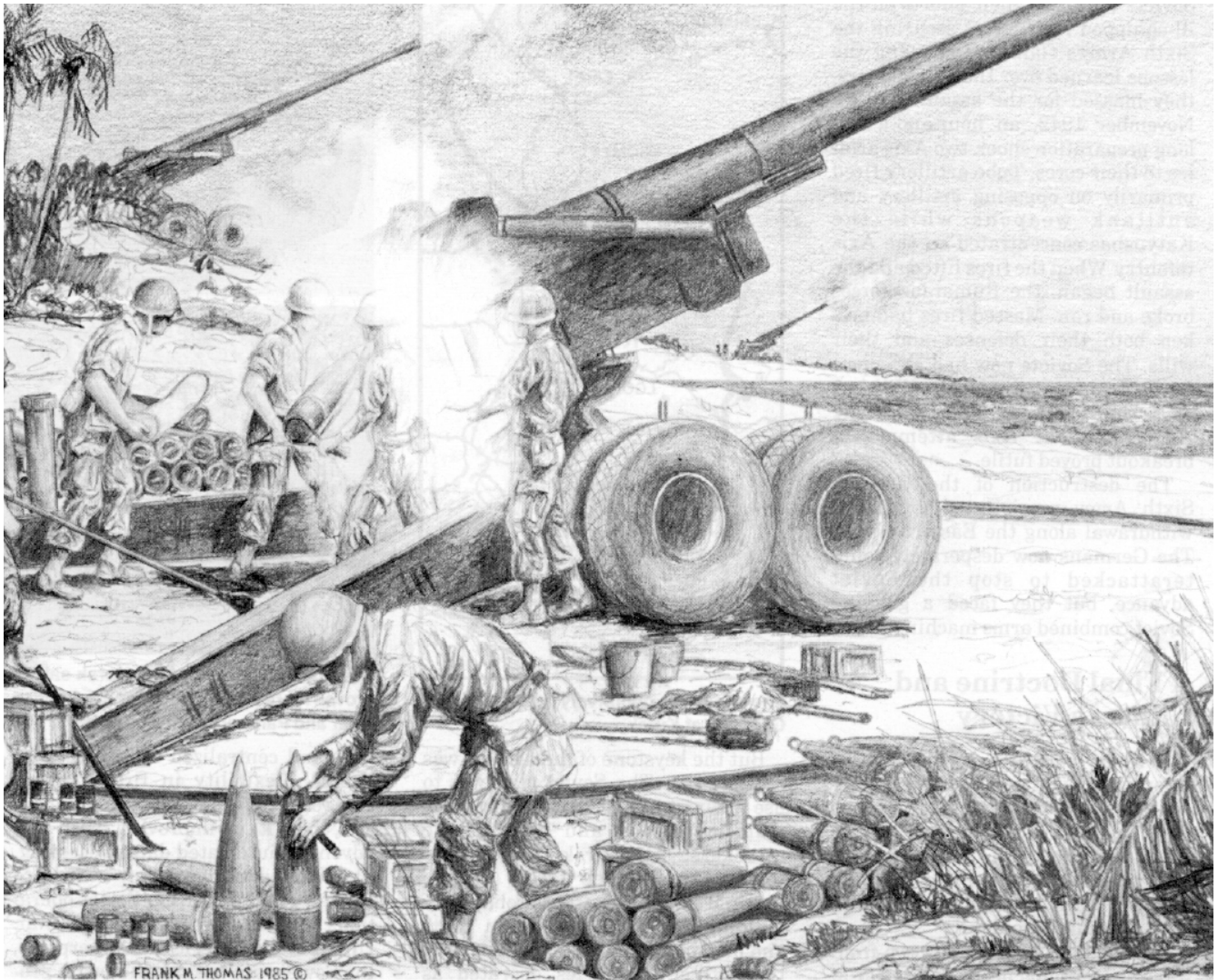
The battle of Kursk stands as a perfect example of mature Soviet fire support tactics. Today's Soviet doctrine differs little from the massed



The Soviet defenses of the Kursk salient proved more than a match for the German Tiger and Panther tanks shown here.

fires and centralized control seen at Kursk. Flexibility in fire planning and response time remains problematic, but it is improving with the advent of automated data processing. The United States Army stands to learn a great deal from Soviet operations in the Great Patriotic War. Unlike their American counterparts, the Soviets are not satisfied with providing one or two direct support artillery battalions per brigade. They are willing to trade flexibility in space and time for selected deep, intensive fires. In contrast, present day American forces have too little artillery attempting to do too much. Close support of the maneuver arms demands that today's field artillery leaders reexamine history and respond accordingly lest we find ourselves like the Germans of Stalingrad and Kursk. 

First Lieutenant Richard A. Lechowich, FA, is the Assistant Brigade Fire Support Officer of the 2d Brigade, 1st Armored Division. He received his commission from Notre Dame University and is a graduate of the Field Artillery Officer Basic Course and the Airborne School. Lieutenant Lechowich has served as a battery fire direction officer and battalion special weapons officer.



From the Coast to the Field

by Mr. Charles H. Bogart

Until 1950, the United States maintained a system of coastal defense fortifications or, more correctly, a system of harbor defense forts. Until the twentieth century, these installations were garrisoned by a few artillerymen who served as caretakers. In time of war, the necessary men to man the forts were obtained from the militia and local volunteers. Both the War of 1812 and the Civil War exposed problems with this system, but little was done until the news media made an issue of the vulnerability of the United States harbors during the Spanish-American War. Then, in 1901, Congress created the Corps of Artillery which consisted of 126 companies of coast artillery and 30 batteries of field artillery. Each coast artillery company contained enough men to man one harbor defense gun battery.

The creation of the Corps of Artillery did not, however, assure the development of a professional, well-trained coast artillery unit. In fact, the two different missions led to constant friction over priorities within the corps. Thus, in 1907, Congress split the Corps of Artillery into two separate entities—the Coast Artillery Corps (CAC) and the Field Artillery. The Coast Artillery Corps was charged with defense of the coastline, and the Field Artillery was to support field forces.

The Early Years

With muzzle-loading cannon and an area of responsibility of a mile or less, there was little need for large numbers of qualified coast artillery gunners;

a cadre of professional leaders could quickly turn any raw recruit into an adequate artilleryman. However, the breech-loading cannon and indirect fire techniques of the twentieth century changed the situation dramatically, and cannon crews had to be trained well in advance of hostilities.

In 1907, the Chief of the Coast Artillery Corps established a need for 49,000 soldiers to man all of the United States harbor defense forts. Nevertheless, Congress

limited the corps to 20,000 officers and men. Of the 29,000 man shortfall, 10,000 slots could be filled with men having little training; but the remaining

19,000 slots required trained personnel. The leaders of the War Department decided to obtain these trained coast artillerymen from the state militias. In fact, they notified each state with a coast defense fortification that one-half of the gun batteries in its coastal defense forts were to be manned by locally trained militia. State adjutants general received this message with varying degrees of enthusiasm; but few states cooperated as fully as North Carolina. In fact, the North Carolina adjutant general formed the North Carolina National Guard Coast Artillery Corps on 11 January 1909. The basis for this unit was the Wilmington Light Infantry, a unit dating from 1853.

By 1917, when the United States declared war against Germany, North Carolina had six companies of coast artillery. These companies totaled 378 officers and men ready for service—more than enough to man the guns of the Harbor Defense of Cape Fear. These companies mustered into Federal service on 29 July 1917 and took up the harbor defenses of Cape Fear at Fort Caswell as the 3d through 8th Companies. Early in 1918, the Harbor Defense of Cape Fear formed four anti-aircraft batteries and six trench mortar batteries for overseas service. The Guardsmen left behind were to protect the harbor entrance to Wilmington at Fort Caswell.

When the last Guardsman returned stateside in 1919, demobilization of the North Carolina Coast Artillery began. Its units became the Coast Artillery Corps, North Carolina Guard, recognized on 31 August 1920 by the federal government as the 421st Company Coast Artillery Corps. In 1922, yet another company—the 422d Coast Artillery Corps—earned its federal recognition.

In 1923, the War Department authorized the North Carolina Guard a coast artillery regiment of five batteries redesignated as the 252d Coast Artillery (Harbor Defense). In 1929, these units received tractor-drawn 155-mm guns and became known as the 252d Coast Artillery (Tractor-Drawn).

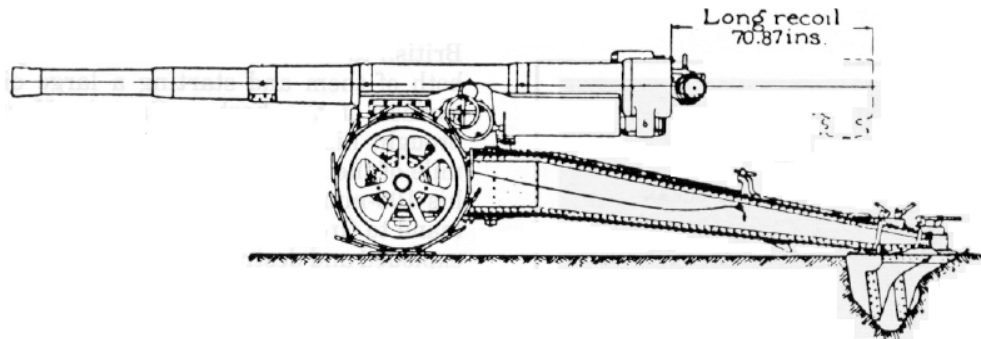
Training and Development

After the fall of France in 1940, the first National Guard troops were called to Federal service. Among the 26 units

federalized, 18 were coast artillery regiments including the 252d Coast Artillery which established a training camp at Fort Moultrie, South Carolina. In January 1941, the 252d moved to Fort Screven, Georgia, and received its first influx of selective service personnel direct from civilian life. The order of the day was drill, drill, and more drill.

In March 1941, the 2d Battalion's Headquarters and Headquarters Battery, as well as, Batteries C and D

received orders alerting them for shipment to



Trinidad—some 2,000 miles from their regimental headquarters.

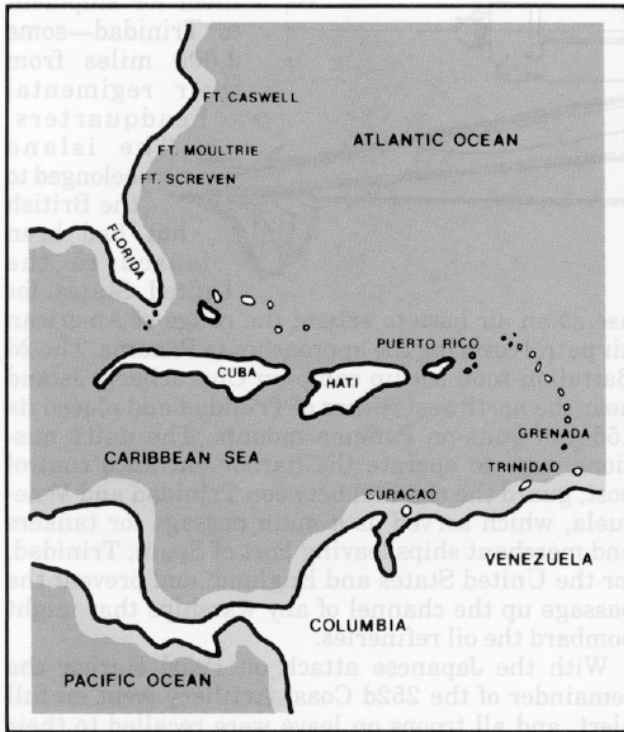
The island belonged to the British but had been leased to the United States for use as an air base to extend the range of American air patrol covering the approaches to Panama. The 2d Battalion soon set up camp on Chacachare Island near the northwest corner of Trinidad and placed its 155-mm guns on Panama mounts. The unit's missions were to operate the harbor entrance control post; guard the channel between Trinidad and Venezuela, which served as a main passage for tankers and merchant ships leaving Port of Spain, Trinidad, for the United States and England; and prevent the passage up the channel of any warships that might bombard the oil refineries.

With the Japanese attack on Pearl Harbor the remainder of the 252d Coast Artillery went on full alert, and all troops on leave were recalled to their duty station. The training schedule was accelerated as new men were assigned directly from civilian life, but the regiment was further fragmented as small groups of soldiers guarded various bridges, railroad yards, and dams in Georgia and Florida. Little did these guards-weary soldiers know that they were destined for far more exotic duty.

The Caribbean Preparations

Lying in the Caribbean were a number of colonial enclaves belonging to the Dutch and French. Foremost among these colonial possessions were the Dutch islands of Aruba and Curacao off the coast of Venezuela. These islands contained the major refineries for processing Venezuelan oil. In fact, Aruba boasted the largest refinery in the world. When the Dutch surrendered to the Germans in May 1940, the islands were occupied by British and French troops. But when France signed an armistice with Germany in June 1940, the French troops withdrew. The British continued to maintain an infantry battalion on each island under Dutch command. The Dutch contributions to the island defenses were limited to three 7.5-inch coast defense guns and a small infantry contingent on each island.

General Marshall recognized the value of these islands in the event of war with Germany and directed the War Plans Division to prepare plans for the Army's response to such an attack. This guidance resulted in a modification to War Plan Rainbow 4. The revised plan would send approximately 2,400 United States troops to these islands to relieve the British garrison. Among the units selected to take part in this operation were Batteries A and F of the 252d Coast Artillery.



The Caribbean was the 252d Coast Artillery's battlefield.

The batteries landed at Aruba and Curacao in February 1942, but their equipment was not yet in position, and the local command structure remained confused. The British garrison had served under the Dutch command; but, when the United States forces arrived on the island in January 1942, Colonel Peter C. Ballard, the commander of the US forces, operated under the premise that his command was to be independent of but in cooperation with the Dutch. The United States Navy exacerbated the problem. Its leaders claimed responsibility for overall defense of the area and felt that Army units should be under Navy command because the Army units' main purpose was to protect against a seaborne attack. Such confusion was to have serious repercussions and almost caused a disaster.

Caribbean Battles

Admiral Karl Doenitz, commander of the German U-boats in the Atlantic, was aware that the United States possessed only limited troops and equipment in the Caribbean and had no real organization to control what it did have. Thus, he directed six U-boats to sail into these waters and sink any ship they came across, but to attack

tankers as their number one priority. Among the U-boats dispatched on this raid was the U-156. It was commanded by Captain Werner Hartenstein who was not content to sink tankers. His audacious intention was to *attack* the oil refineries at Aruba with his deck gun.

On the night of 15 February, the U-156 crept into the San Nicholas harbor at Aruba. The city and refinery were lit up like a Christmas tree. At 0131 hours, the U-156 fired a spread of torpedoes at the British tankers *Pedernales* and *Oranjestad*, sinking both of them and starting a large oil fire on the surface of the harbor. Captain Hartenstein now brought his surfaced U-boat within a quarter of a mile of the refinery and prepared to open fire with his 105-mm deck gun. But when he gave the command to fire instead of spitting out a shell, the gun exploded and destroyed itself—the gun crew had forgotten to remove the muzzle plug that kept the barrel free of saltwater when submerged. With his main gun useless, Captain Hartenstein ordered his 37-mm crew to open fire on the oil tanks. The crew fired 16 rounds without any apparent effect; so the U-156 broke off the action. As she left the harbor, however, she struck one more time with her torpedoes and hit the American tanker *Arkansas*, causing heavy damage.


While the U-156 was dealing death and destruction, the American forces slept. The U-156 was safely at sea before the American duty officer learned of the attack. Had the 252d batteries been informed, there was little they could have done. They did not even have their equipment emplaced. Of course, crews worked quickly the next day to install the guns and fire control equipment, and concerned leaders soon clarified the chain of command. Rear Admiral Jesse Oldendorf of the US Navy was in command of Aruba and Curacao, and Captain Van Asleck of the Dutch Navy became his chief of staff.

In April 1942, the War Department directed the remainder of the 252d Coastal Artillery to embark for Trinidad. The 1st Battalion Headquarters and Battery E set up camp on Monos Island near the northwest corner of Trinidad to protect the Boco Grande Channel. The 3d Battalion Headquarters and Battery E established their position at Iacos Point to protect Serpents Mouth Channel. Regimental headquarters was set up at Port of Spain. With the 252d Coastal Artillery ready to show its worth, the German U-boats moved their operations beyond the range of the 155-mm guns.

In December 1943, Puerto Rican troops relieved Batteries A and F which shipped out for Trinidad. For the first time in over 2 years, all of the batteries of the 252d Coastal Artillery were concentrated in one place. This togetherness did not last long, however, because the Army Ground Force was in desperate need of trained artillery units. In early 1944, the 252d returned to Fort Jackson, South Carolina, and converted into three field artillery battalions—the 1st Battalion became the 541st Field Artillery; the 2d Battalion, the 540th Field Artillery; and the 3d Battalion, the 530th Field Artillery.

The three battalions soon went to Fort Sill, Oklahoma, to help train battery officers and forward observers. After this duty, the battalions moved to Fort Chaffee, Arkansas, in preparation for overseas movement to the European theater where they served as corps artillery. The 530th Field Artillery served in Italy and received two battle streamers; the 540th and 541st both went to France, and each was awarded one battle streamer.

All three units were inactivated in late 1945 but were reactivated in 1946 as part of the North Carolina National

Guard, Today, the heritage of the 252d Coastal Artillery is carried on by the 30th Artillery Brigade. 

Mr. Charles H. Bogart works for the Kentucky Department of Military Affairs as a disaster response planner. He served 3 years in the US Navy and has been published in the *US Naval Institute Proceedings*, *Field Artillery Journal*, *AFV News*, *Warship International*, and *Military History*.

View from the Blockhouse

FROM THE SCHOOL



Automation on the Range

A battery commander is discussing his unit's next field exercise with his executive officer. "Lieutenant Smith, we have a National Training Center rotation coming up in a couple of months, and I'm concerned. I want to maximize the realism of our training on next week's field exercise. Let's try to spread out the battery over a 1,000 meter front—just as we will at the National Training Center!"

The executive officer grimaces. He knows that the range safety cards from range control are only valid if the howitzers are within 200 meters of the firing point marker. Unless someone has thought of a better way to do field artillery safety, this is going to involve a lot of manual computations and big hassle with range control.

Good News! Someone has developed an automated method of computing range safety cards and fans in accordance with AR 385-63. In April 1985, the 101st Airborne Division Artillery demonstrated a PC-based system to automate range safety computations. The Gunnery Department and Data Systems Office at Fort Sill, Oklahoma, subsequently reviewed the program and made several changes to improve the program. The result of these efforts is now known as the automated range safety system.

The automated range safety system will maximize the target area available using multiple doglegs, for any location occupied by a fire unit. It will also produce

individual range safety cards and fans for each howitzer in a large position area to ensure each weapon fires safe data.

The automated range safety system consists of two programmed diskettes and a user's guide. The programs will work on any IBM compatible MS-DOS computer with at least 512 KBs of memory and a color graphics card. Slight reconfigurations will allow it to run on PC-type computers with dual 5 1/4-inch floppy disk drives (double-sided double density) or XT-type computers with a hard disk drive with one 5 1/4-inch floppy disk drive. Range safety card and fan output go to the computer's monitor or to a dot matrix graphics printer IBM 5152 or equivalent. The program will also produce a 1:50,000 safety fan using an HP7475A plotter or equivalent.

The automated range safety system is designed for range control personnel. They will input and verify the initial geographical boundaries of the target area based on their particular impact area. Given the location of the firing unit, the computer will identify the target area, provide vertical intervals, and select usable charges for the position. The program will then yield a range safety fan which can be made into a graphical overlay of the target area (scale 1:50,000) including no fire areas.

Is this program acceptable for use at all range controls? Yes! The United States Army Field Artillery Board evaluated the automated range safety system program extensively. The Board's evaluation checked all the range safety cards and fans produced

for the complete range of field artillery weapon systems and found them accurate, safe, and valid.

The Field Artillery Board concluded that the automated range safety system conformed with provisions established in AR 385-63. This program merely automates the time-consuming manual computation of range safety cards and fans. In fact, the automated range safety system has the capacity to generate a range safety card and fan in a matter of a few seconds. It sometimes takes up to 2 hours to produce the same data by manual computation.

Computer hardware necessary to execute the automated range safety system program is available within the current Army inventory. Software programs and user's manuals are available upon request to interested range control organizations by writing: Data Systems Office, US Army Field Artillery School (ATSF-SD), ATTN: Automated Range Safety System, Fort Sill, Oklahoma 73503. Questions about computer system compatibility can be addressed by phoning AUTOVON 639-2702/5412/6110. (CPT Hal R. Nyander)



BATTLEKING

BK 20-85, MARWIN Meteorological System (Source: DCD, USAFAS, Fort Sill). A smaller, lightweight meteorological system that can be used to augment the meteorological data system (MDS) has been developed for rapid deployment forces, units in support of airmobile and

air assault operations, and light divisions. Both the present AN/GMD-1 and the new MDS AN/TMQ-31 are too heavy to be airlifted.

The Field Artillery Board conducted an evaluation of the MARWIN by mounting a balloon-launcher FS-15 on a 3/4-ton trailer. During high winds and at night, this device enabled one operator to run an entire flight. With the present inflation system, the ML-594/U, at least two operators are required during high wind releases.

The MARWIN system used up to eight Omega navigational aid stations during the evaluation to determine the location of the radiosonde. The MDS uses only three stations to form a triangle around the ground location. No triangulation is needed for MARWIN. It automatically uses every station that is emitting a usable signal.

A total of 37 MARWIN radiosondes were flown during training, the pilot test, and the evaluation. Of the 37, 36 yielded the required meteorological messages (one aborted for pressure, temperature, and humidity failure). The failure rate experienced with the MARWIN radiosonde was much less than the failure rate experienced with radiosondes used in the previous meteorological system tests.

For more information on the MARWIN evaluation, write to: President, Field Artillery Board, ATZR-BDO-BATTLEKING, Fort Sill, OK 73503-6100.

Safety Alert!

Field artillery units are now receiving the AN/GVS-5 laser rangefinders. The following ocular safety distances should be implemented immediately:

For unprotected personnel looking at the source of the laser beam without optical aid:

- AN/GVS-5 beam without attenuation filtering: 2,700 meters.
- AN/GVS-5 beam with red attenuation filter: 290 meters.
- AN/GVS-5 beam with yellow attenuation filter: 56 meters.

For unprotected personnel looking at the source of the laser beam through standard 7x50 binoculars:

- AN/GVS-5 beam without attenuation filtering: 13 kilometers.
- AN/GVS-5 beam with red attenuation filter: 1,800 meters.
- AN/GVS-5 beam with yellow attenuation filter: 550 meters.

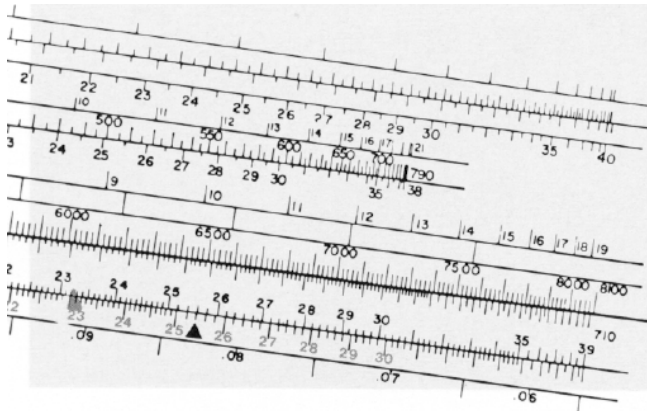
Laser safety goggles, NSN 4240-00-258-2054, remain adequate to protect personnel from the AN/GVS-5.

Point of contact regarding the safety implications of AN/GVS-5 use is Captain Don Lato, Materiel and Logistics Division, Directorate of Combat Developments at AUTOVON 639-2352/3652.

Call for Papers

The 1st Battalion, 22d Field Artillery is seeking historical information, pictures, and memorabilia to compile a complete organizational history. Anyone who is able to assist, please contact the 1-22d FA by writing: HQ, 1-22d FA, ATTN: Historian, APO New York 09070-1194 or by calling Nuernberg Military 2623-877/830.

HOW 155 mm
155AM2HE M107
CHARGE 4GB
JUNE 85



GFT Update: Take Note!

The recently issued edition of the M109A1, A2, A3, and M198 graphical firing tables—GFT 155AM2-HEM107—omitted the range probable error (PE_R)

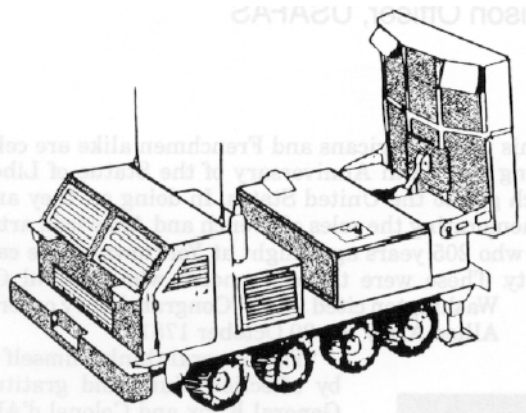
gage points. What's more, some 2,000 charge 2GB/4GB GFTs went out without height of burst probable error (PE_{HOB}) gage points.

Immediate corrective action has occurred at Fort Sill's GFT plant. Units in possession of GFTs with these omissions can apply pen and ink corrections using the following information:

Place a black equilateral triangle (▲) denoting a PER gage point above the ▲FS/▲10 MHOBS scales with the apex of the triangle aligned with the ranges indicated below.

Also make the PE_{HOB} gage point (red right triangle) on the fuze M564 FS scale with the apex aligned on the ranges listed below:

Charge	PE _R gage point	PE _{HOB} gage point
2GB	3500	4200
3GB	4350	5050
4GB	6500	6050
5GB	9050	7000
6WB	9000	7080
7WB	10000	NONE
8	7050	10250



Shrinking the Firefinder

The downsized AN/TPQ-36 radar system will repack radar and support equipment currently mounted on two 5-ton trucks and two 1½-ton trailers.

It will replace today's system with two high-mobility multipurpose wheeled vehicles (HMMWV) and one ¾-ton antenna trailer in the light infantry divisions. The operational concept of a downsized system is being evaluated with the appraisal centered on the new ¾-ton radar antenna trailer. Although commercial utility cargo vehicles (CUCV) have been used for early testing because of the nonavailability of HMMWVs, the latter are still the objective vehicle for the downsized system.

The downsized version employing the CUCV as the prime mover has been evaluated by the Army Development and Employment Agency at Fort Lewis, Washington. It has been approved for internal aircraft loading aboard C-130/141 aircraft, but it has not been approved for external helicopter lifts. In the HMMWV version of the system, the S-250 shelter will have to be removed and palletized before internal loading on Air Force aircraft, but the system can be helicopter lifted.



The French Artillery at the Battle of Yorktown

by Lieutenant Colonel Henri Hure, French
Army Liaison Officer, USAFAS

This year Americans and Frenchmen alike are celebrating the 100th Anniversary of the Statue of Liberty, a French gift to the United States. In doing so, they are also commemorating the roles of French and American artillerymen who 205 years ago fought at Yorktown in the cause of liberty. These were the cannoneers who General George Washington cited in his "Congratulatory order to the Allied Army" on 20 October 1781.

"The General thinks himself bound by affection, duty, and gratitude to General Knox and Colonel d'Aboville for their great care, attention, and fatigue in bringing forward artillery and stores and for their judicious and spirited arrangement of their parallels. He requests to communicate thanks to the officers and cannoneers of their respective commands."

**"Humanity has won its battle!
Liberty has a country!"
General de LaFayette**



Leaders of the combined artillery forces—Major General Henry Knox and Colonel d'Aboville—played key roles at Yorktown.

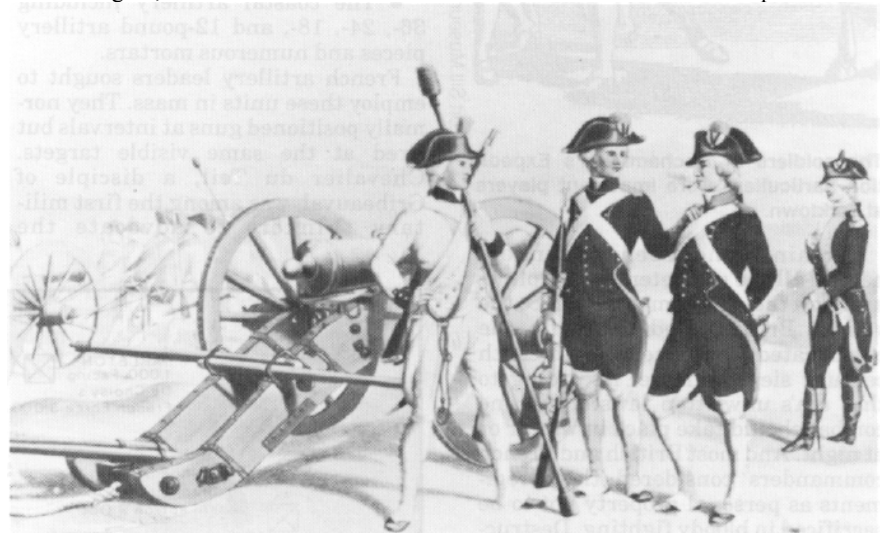
The French Influence

Washington's small artillery arm profited immensely from French assistance. One need only consider Cornwallis' comment to Colonel d'Aboville to see just how important it was: "It is to you that I should have surrendered Yorktown, because your so well-aimed guns annihilated my fortifications."

But to understand the full role played by the French artillery during the American Revolution, one must recognize that on 4 July 1776 the US artillery had only 580 soldiers and about 50 British-made guns. Only France was willing and able to supply to the tiny American Army the guns and ammunition necessary to increase its pitiful arsenal.

In response to a petition from the American Congress, Comte de Vergennes, Secretary of State of King Louis XVI, led the campaign to help the Colonists with personnel and equipment. In October of 1776, 8 ships secretly delivered 200 guns with their trains; 27 mortars; and 300,000 powder charges to America. Due to hazards at sea, only a portion of the cargo arrived at its destination, but the logistical stream kept coming. By the end of 1777, 90 percent of the gunpowder used by the American Army came from France.

Simultaneously, thousands of French volunteers decided to join the swelling ranks of Washington's Army. Among them were Marie-Joseph, the Marquis de LaFayette; Le Begue du Portail, founder of the American Engineer Corps; Etienne de Rochefontaine, first West Point commander; Major l'Enfant, future architect of Washington; and Chevalier du Plessis.



The French artillerymen had splendid blue uniforms with red turnups and facings.



General Washington personally supervised the siege operations.

September-October 1986

General Knox's first adjutant. What's more, following the Treaty of Amity in 1778, French regular forces under Rochambeau deployed to fight alongside American forces under General Washington.

The Antagonists at Yorktown

Despite the significant logistical support provided by the French, General Knox could field only 60 guns or mortars including 26 heavy cannons at Yorktown. He faced 65 British artillery pieces and 90 naval guns from the *HMS Charon* and *Guadalupe*. Assisted by Chevalier du Plessis, Knox headed "the most efficient branch of the three services." But his team could not compensate for

the overwhelming superiority of the British artillery. French reinforcements were indispensable.

Under the command of Colonel d'Aboville, 600 artillerymen of the Royal Corps of the Artillery had arrived from France on 10 July 1781. The regiment, composed of 6 batteries and 2 engineer companies, constituted the normal artillery complement of a force of 6,500 infantrymen and 500 cavaliers. The French cannoneer was a tough professional, attracted either by good pay or a persuasive recruiting sergeant. He had a splendid blue uniform with red turnups and facings of which Lieutenant Bonaparte, the future leader Napoleon, later observed, "I do not know any uniform more beautiful than artillery dress."



Fort Sill Museum Archives

The soldiers of Rochambeau's Expedition Particuliere were important players at Yorktown.

Certainly the French gunners needed all the competence, discipline, and elan they could muster to face the valiant British "Red Coats" in the complicated techniques of eighteenth century warfare. According to that era's unwritten laws of war, no combat should take place in winter or at night. And most British and French commanders considered their regiments as personal property not to be sacrificed in bloody fighting. Destruction of fortifications or successful maneuvers were the objectives in these gentlemanly wars where the participants often knew one another quite well. This was certainly the case at Yorktown where British officers spoke fluent French as the testament to their aristocratic education.

Together, the Americans and French fielded quite an impressive array of artillery. Although the Americans boasted 64 total weapons, the French arsenal of 60 was clearly superior with 32 heavy pieces to the 26 of the Americans. The French also had 10 cannons manned by a detachment of the "Regiment de Metz."

The French Arsenal

The operation of the French arsenal was also first-rate. For over a decade and a half, Jean Baptiste de Gribeauval had, as Inspector General

of the Artillery, systematically improved the French arsenal. In fact, in 1781, the French had the best guns in Europe. Gribeauval had designed and fielded a standardized artillery weapon system—a family of smooth bore tubes designed similarly but differing in their intended roles. Specifically, he had created an entirely new howitzer called an "obusier" with a shorter barrel than a cannon. The obusier's curved trajectory and explosive bomb proved well-suited for the Battle of Yorktown.

Moreover, Gribeauval had created three artillery subdivisions:

- The field artillery equipped with light and mobile cannons of 12-, 8-, and 4-pounds and howitzers of 12-, 8-, and 4-inches.
- The siege artillery equipped with 24-, 16-, and 12-pound artillery pieces and numerous mortars.
- The coastal artillery including 36-, 24-, 18-, and 12-pound artillery pieces and numerous mortars.

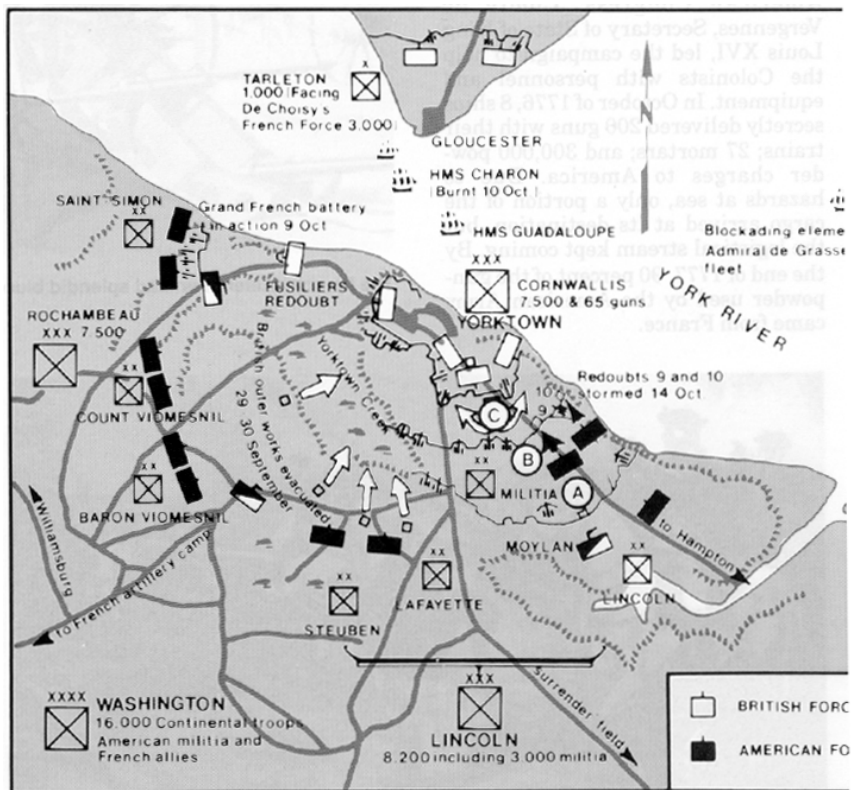
French artillery leaders sought to employ these units in mass. They normally positioned guns at intervals but fired at the same visible targets. Chevalier du Teil, a disciple of Gribeauval, was among the first military thinkers to advocate the

concentration of artillery fires. He noted, "The artillery must be applied on key points where one wants to force the enemy, so it is only after an artillery preparation that the victory will be obtained." Du Teil realized that on most battlefields massive concentrations of fire could be achieved by the light and mobile pieces. Yorktown, however, posed a different challenge. The Franco-American force faced carefully emplaced and well-protected British siege guns supplemented by mobile Royal Navy guns. Even the terrain favored the British. Their advanced positions were in untrafficable swampy areas, and the spacious Citadel of Yorktown rested in the mouth of York River and would accommodate the full complement of Cornwallis's 7,500 experienced regulars.

The Plan

General Washington's plan of attack was quite conventional. He envisioned the battle in two stages:

- Phase 1—Allied forces would occupy a first parallel as close to the British redoubts as possible.
- Phase 2—The Allies would seize a second parallel in order to annihilate



The Battle of Yorktown was a classic siege operation in which field artillery took a central role.

and storm the permanent fortifications of the Citadel.

To support these efforts Washington directed the Allied artilleries to act separately. The French would occupy positions to the west of Hampton road, and the Americans would take up firing points to the east. In fact, the French artillery park was only a few hundred yards away from Washington's command post.

The Execution

The early stage of the siege began auspiciously for the Allies when inexplicably the British withdrew several advanced redoubts on 29 and 30 September. The French and Americans immediately installed themselves in what would become the first parallel. By sunset on 6 October, a French battery, which had pushed to within meters of a British redoubt, provided

covering fire as the Allied infantry occupied the first parallel.

By 9 October, the engineers had prepared the first parallel for installation of the guns; and two batteries—one American and one French—came into action. In fact, at 1700 hours, Washington personally fired the first shell from the American battery. Although British artillery fires reinforced by those of the Royal Navy proved troublesome, the Allied engineers soon had six more batteries in action.

The British suffered significant casualties in the ensuing bombings, and they began to withdraw their constantly firing guns from the embrasures. The Allies immediately took advantage of this withdrawal, and by 10 October, 40 cannons and 16 mortars were firing in mass. On the evening of the 10th, a French battery firing at the maximum rate of fire sank the frigate *HMS Charon* and her 44 cannons, and the jubilant Washington

Field Artillery Journal


decided to install his forces on the second parallel.

On 13 and 14 October, the Allies launched a prolonged artillery preparation to annihilate the remaining resistance in advanced positions such as redoubts 9 and 10. On the evening of 14 October the two redoubts fell, and Washington pressed forward two batteries—one French and one American—into the second parallel as close as 200 meters to the British lines. Joined by six more batteries, these units fired with devastating accuracy. French and American artillerymen hit British embrasures time and again.

The dismayed Cornwallis decided to respond with a sortie to destroy the two most advanced Allied batteries. At dawn on 16 October, 350 British soldiers under the command of Colonel Abercrombie bravely attacked the French and American artillery positions. This attempted *coup de main* yielded only limited successes. And 6 hours later the Allied guns were back in action. In fact, by 17 October 8 batteries made up of 100 artillery pieces were firing from the second parallel.

The End

Cornwallis later recalled that in this point of the battle, "We knew that there was not one point of our front where we could expose a cannon. Meanwhile, our shells were almost exhausted; and the French-Americans were firing from 200 meters away. That is why I proposed to capitulate." And capitulate he did.

On 20 October 1781, Cornwallis surrendered his command as a direct result of his opponents' artillery superiority. In doing so, he sounded the death knell of Colonial America. French and Continental artillerymen had combined their skills and devotion to the common cause of liberty. Their fraternity, born at Yorktown, has lasted for over 200 years. Today, French and American artillerymen continue to serve side-by-side in the defense of independence and liberty. 



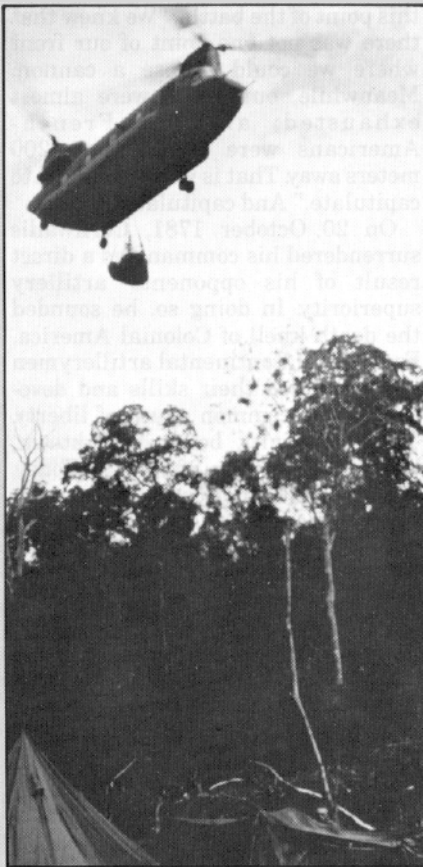
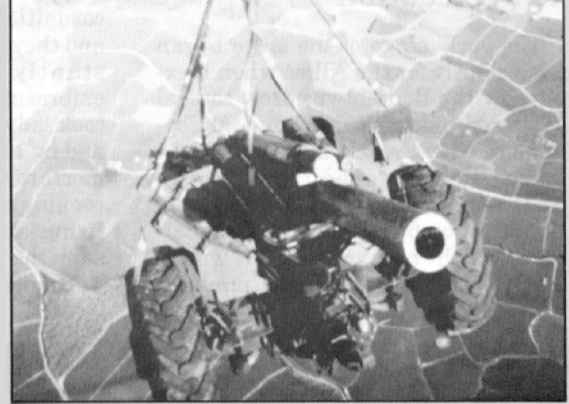
Fort Sill Museum Archives

"The Siege of Yorktown." George Washington and French Commander Comte de Rochambeau plan the final Allied campaign.

Lieutenant Colonel Henri Hure, is the French Army Liaison Officer at the US Army Field Artillery School. He is a graduate of Saint Cyr Military Academy and is a recipient of French Airborne Wings. He served as the French Liaison Officer to the British Artillery School at Larkhill, England; and was a staff officer with the French Army Staff Headquarters in Paris, France.

The Air Assault Concept is Great!

by Colonel (Retired) Griffin N. Dodge



CH-47 "Hooks" became the logistical workhorses of the air assault division.

One of the real advantages of being a Redleg has always been the generous allocation of transportation available to the field artillery. While the infantrymen were slogging along in the mud, artillerymen have always seemed to have a ride. Oh, there have been a few isolated instances when gunners have had to manhandle a field piece into position. But by and large, artillery units have always been blessed with a generous supply of horses, caissons, limbers, carriages, tractors, trucks, motor carriages, or armored vehicles on which to ride. For some Redlegs that tradition came to a screeching halt in the early 1960s with the creation of the 11th Air Assault Division (Test).

In February 1963, the Department of the Army quickly and quietly snatched up a large group of soldiers from a variety of locations and set them down at Fort Benning, Georgia, where they became part of the innovative 11th Air Assault Division (Test) (11th AAD). The idea was to create a combat force "freed from the tyranny of terrain" by exploiting the capabilities of Army aviation.

Early testing involved one 105-mm howitzer battery, part of a Little John rocket battery, pieces of a direct support

battalion headquarters, part of an aerial rocket artillery battery, and a few individuals representing a division artillery headquarters. The rest of the test division existed in "bits and pieces" of units with the exception of a single full-strength infantry battalion. A fledgling aviation group was also organic to the division. From its resources came the majority of the aviation and transportation support available to other division elements.

Surface transportation resources organic to the division were almost nil. Vehicles in the 105-mm howitzer battery included a couple of ¼-ton trucks and a single "mechanical mule." The idea was that the medium lift helicopters of the division's assault support helicopter battalion from the organic aviation group would displace all field artillery units in support of the maneuver forces. Helicopters would also deliver ammunition to the battery position.

There was no doctrine nor were there any "school solutions" to provide guidance on how the field artillery should perform its traditional mission in the air assault concept. In fact, the principal task of the soldiers in the division was to figure out how to make *air assault work*. "Experiment" and "innovate" became the watchwords;

ideas from the "bottom up" were encouraged, and no idea could be abandoned out of hand. The rule for all elements of the division was: "Figure out a good way to get the job done, then try it. If it works, document it, advertise it, adopt it, and refine it. If it doesn't work, document it, advertise it, and don't do it again!"

Initially, the medium lift helicopter available to the division was the venerable CH-37, Mojave. The then brand new CH-47, Chinook, did exist; but very few of these "Hooks" were available, and they were experiencing the "teething" problems normally associated with new equipment. Both helicopters could carry a howitzer as an internal or external load. In the continental United States, Redlegs favored the former approach. After all, an inadvertently dropped howitzer sling load makes a terrible mess on the ground and might even damage a howitzer.

Ammunition resupply for the 11th AAD's field artillery units posed another problem. As a departure from normal procedures of resupply, the division's support command brought ammunition to a logistic facility in a brigade area. From there, ammunition personnel from the field artillery unit and from support command would work together to ship ammunition, by helicopter, directly to gun positions at the firing battery location.

One early experiment in ammunition resupply occurred during an 11th AAD Artillery firing demonstration at Fort Benning. In a cooperative effort involving aviation, support command, and field artillery elements, soldiers trucked ammunition to a small airstrip. There, they broke it down into a variety of helicopter loads and moved it to the firing battery via a combination of internal and external shipments using both the CH-37 and CH-47 helicopters. The demonstration clearly showed that ammunition could be loaded very quickly into a helicopter using various pieces of cargo handling equipment. Unfortunately, unloading at the battery position relied exclusively on the strong backs and legs of battery personnel. Sling-loading ammunition using a nylon mesh sling was the way to go.

In July 1965, the 11th Air Assault Division (Test) disappeared. Concurrently, the flags of the 1st Cavalry Division, in Korea, and the 2d Infantry Division, then at Fort Benning, traded places. Personnel from the now defunct 11th AAD became the core of the newly formed 1st Cavalry Division

(Airmobile), known locally as the "1st Air Cav." The division drew the remainder of its complement from the 2d Infantry Division and other installations.

The field artillery for the newly formed 1st Air Cav consisted of three direct support battalions equipped with M101 105-mm howitzers, an aerial rocket artillery battalion equipped with UH-1B helicopters mounting 2.75-inch rocket pods, an aviation battery, and a division artillery headquarters battery.

The prime mover and the ammunition resupply transportation for the field artillery would be the 48 CH-47 Chinook helicopters of the 228th Assault Support Helicopter Battalion.

Concurrent with the orders activating the 1st Air Cav came another order requiring the Division to be capable of deployment in 8 weeks. But in reality, the Redlegs of the 1st Cav did not even have that much time. The Division initiated deployment to Vietnam in a mere 6 weeks.

As the main body of the Cav arrived in South Vietnam in mid-September 1965, additional field artillery resources became available. The 2d Battalion, 17th Field Artillery, a separate 105-mm howitzer battalion, and the 6th Battalion, 14th Field Artillery Battalion, a composite 8-inch and 175-mm gun battalion, joined the Division Artillery. In the tradition of the field artillery, both units had a "liberal" authorization of trucks. Both proved a tremendous boon to the Division which was critically short of ground transportation.

The 2d Battalion, 17th Field Artillery not only demonstrated excellent surface mobility, it quickly picked up the air mobility techniques from the direct support battalions and operated effectively in that role. With a clear eye for reality, the Division made no effort to bring the big weapons of the 6th Battalion, 14th Field Artillery into the air assault fraternity.

Elsewhere, the tradition of experimentation and innovation lived on. Even before their arrival in Vietnam, 1st Cav's artillerymen concluded that they should remove their ammunition from the wooden packaging boxes and transport it to the firing batteries in fiber cylinders. This procedure reduced the weight penalty inherent in sending the full boxes. During testing, ammunition in wooden boxes had made a very workable load in the nylon mesh cargo nets. Unfortunately, the fiber containers tended to slip through the mesh. Redlegs also experimented with A-22 containers, but these bags were just too small.



"Experiment" and "innovate" were the watchwords of the 11th Air Assault Division Artillery.



1st Air Cav Redlegs soon designed a new sling arrangement for the M102.

The initial solution was to load the fiber containers laterally on the floor of the Hook, and secure the load with straps running the length of the floor. When the Hook arrived at the gun position, the crew chief simply released the strap and the pilot raised the nose of the Hook, allowing the fiber encased ammunition to roll down the ramp and onto the ground. Although this technique was a workable solution, it had some obvious drawbacks. The main problem was one of *time*. The 48 Hooks in the 228th were achieving about a 50 percent availability rate, and there was a great deal of competition for their use. In addition to displacing field artillery units and resupplying them with ammunition, the Hooks had to relocate much of the 80,000 gallons of fuel used daily by the Division. Furthermore, they carried engineer earth-moving equipment, displaced heavy equipment of support command, and evacuated downed aircraft. In short, the ground time necessary to load and offload the Hooks with artillery ammunition proved an unaffordable luxury.

Once again, necessity proved the mother of innovation. In a "blinding flash of the obvious," 1st Cav soldiers decided to place an ammunition tarp in the cargo net and place the fiber containers on the tarp. This fix proved workable especially after some judicious sewing by the Supply and Service Battalion's Parachute Rigger Detachment bound the tarp to the net, thus preventing slippage.

As the 1st Air Cav became involved in sustained combat operations, the Division's Redlegs learned several important lessons.

- The battery fire direction centers could not operate continuously with their authorized personnel. They required augmentation usually by some quickly-trained cannoneers.

- The three-man forward observer teams needed a fourth member because the supported maneuver companies often divided into two elements each needing a forward observer team.

- Much to the surprise of all concerned, batteries could sustain operations at slightly more than half of authorized strength. However, the undermanned unit's fatigue level soon rose to very dangerous levels.

- The need to make maximum use of the Hook's lift capability prompted "piggy-backing" ammunition loads in a cargo net suspended from the axle of the howitzer during battery displacement. Thus a Hook load, consisting of the howitzer and ammunition, could be prepared ahead of time and merely lifted out as a single load when the helicopter arrived.

- Fabricated ammunition nets were in short supply posing an additional problem. A battery always required sufficient nets on hand for an immediate displacement, yet there had to be sufficient nets available at the support command ammunition point to ensure that ammunition resupply missions could be conducted promptly. Juggling ammunition nets caused more than a few worrisome moments.

Early in 1966, still more field artillery resources reached the 1st Air Cav. Elements of the newly arrived 1st Battalion, 30th Field Artillery Battalion, a 155-mm, M114 unit were attached to the Division for specific operations. So, when the 1st Cav initiated operations in February 1966 on the central coastline of South Vietnam, elements of the 1-30th FA joined in. As the maneuver forces moved inland beyond the range of the road-bound fire support sources, the need for additional fire support became apparent. Accordingly, the division artillery commander alerted a battery of the 1-30th FA for displacement by helicopter. The fact that there was no precedent for such a move was immaterial. The 11th AAD spirit of innovation and experimentation prevailed.


The four CH-54 Flying Cranes of the attached 478th Transportation Aviation Company could each lift the 155-mm howitzer using slings and expertise provided by the 27th Maintenance Battalion. The battery quickly rigged the big 155s for sling loading and also developed helicopter loads on the spot. Some compared the unfolding events to a platoon of enlistees who had just received their field equipment being told to pack up and move out in a half-hour for a weeklong bivouac, but the battery displaced within hours of receiving the warning order.

Helicopter displacement of batteries from the 1-30th FA soon became routine events, and the big howitzers

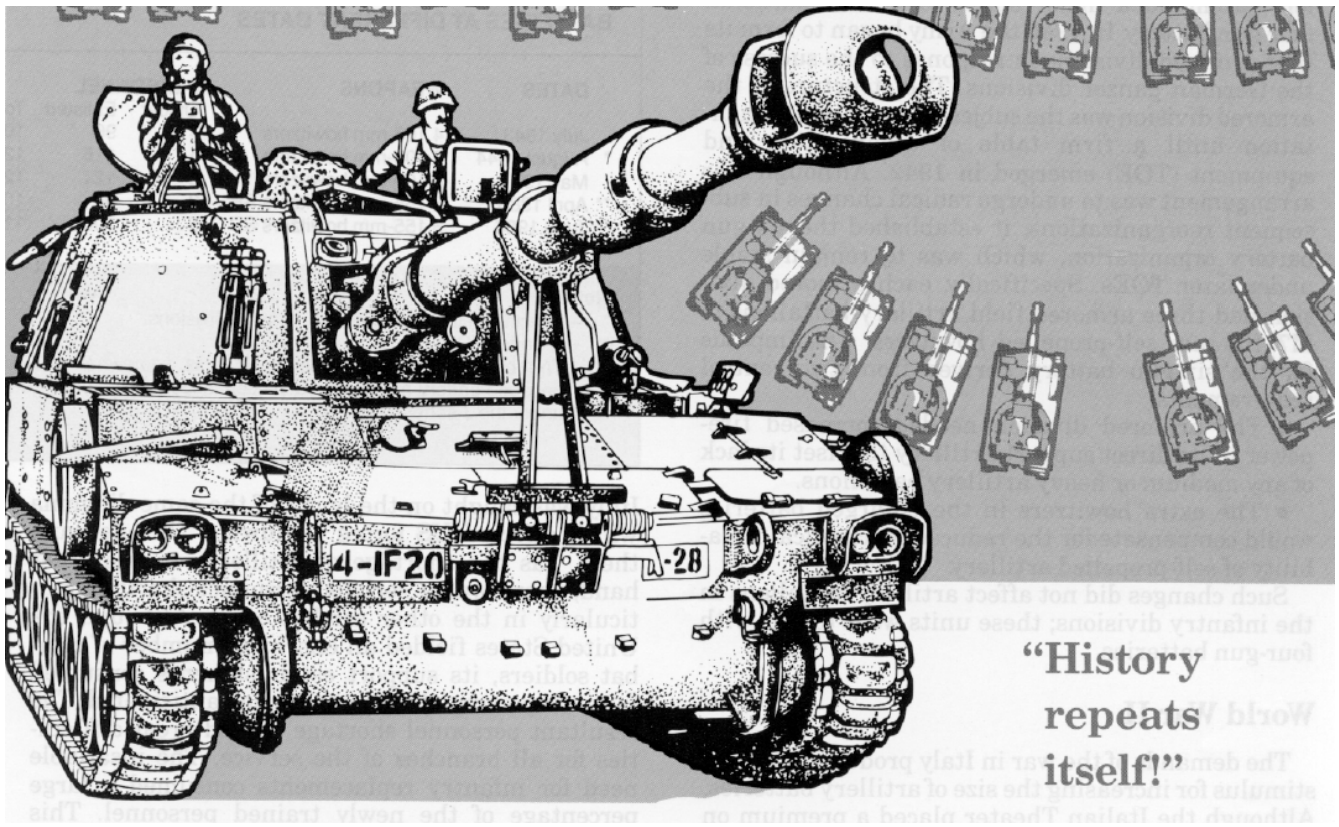
went everywhere other elements of the 1st Cav did.

In the spring of 1966, the new, light-weight M102 105-mm howitzer reached the 1st Air Cav. The reduced weight of the largely aluminum M102 suggested that Hooks could carry more ammunition with each howitzer. But the M102 proved "fragile" in comparison to the old, rugged, and reliable M101, and the piggyback technique used with the M101s could not be performed with the M102. The "stub axles" of the M102 would just not support the load. If the full load-carrying capability of the Hook were to be realized, Redlegs had to devise a new method.

Once again innovation and experimentation prevailed. The Redlegs quickly determined that the solution involved the bowed "wishbone" opening in the trail of the M102. They designed a new sling arrangement, conducted an experiment, and put the successful scheme into action.

The field artillerymen of the 11th AAD and the 1st Air Cav met the challenges of providing fire support to maneuver elements while experimenting with the air assault concept. They did so with remarkable enthusiasm and with unquestionable success. These early days in the Air Assault Community were heady experiences for the Redlegs. That same enthusiasm and the spirit of "bottom-up" innovation which characterized air assault artillery must be continued as we meet the challenges of providing close, continuous fire support to maneuver elements in the AirLand Battle. 

Colonel (Retired) Griffin N. Dodge, FA, is currently a free-lance writer and graduate student living in Santa Fe, New Mexico. After receiving his commission as a second lieutenant through ROTC at Colorado State University, he held various field artillery assignments at the battery and battalion level at Fort Hood and in Japan. He was operations officer of the Support Command, 11th Air Assault Division (Test), and after the unit deployed to Vietnam as the 1st Cavalry Division (Airmobile), he became the executive officer of the 1st Battalion, 77th Field Artillery. He later commanded the 2d Battalion, 27th Field Artillery of the 3d Armored Division in Germany.



“History repeats itself!”

Less Will Get You More:

A Brief History on the Size of FA Batteries

by Captain Thomas C. Keenan

How many times have you heard that old saying and thought, "Yes, history has an impact on everything we do, but when has it ever really repeated itself?" In reality, events are never identical; the circumstances surrounding them are always different. Today, in the Field Artillery, we are experiencing changes which seem very much like earlier ones. Like the howitzer units of the past, many of our direct support artillery battalions are growing. However, the reasons behind this contemporary expansion to the 3x8 configuration are a distant reflection of the reasons which led to the adoption of six-gun batteries almost 40 years ago.

The various changes in battery size are in fact stages in a long-term process that has been going on since World War I—the search for greater firepower in the face of increasing enemy threats and personnel constraints. A brief examination of the factors which surrounded past changes in the size of field artillery batteries can give us some

insight into this historic process. At the same time it will underscore the uniqueness of contemporary changes.

Pre-World War I Artillery

Prior to World War I, our light and medium artillery batteries had four guns or howitzers each. Tactical considerations and technical limitations dictated this configuration which proved effective throughout the Great War and inter-war period. However, in the late 1930s growing world tensions and the outbreak of World War II prompted the Army to reorganize to meet the demands of future combat. In fact, the field artillery underwent change at all levels. In batteries, trucks and tractors gradually replaced the horse as prime mover. In light battalions, the four 105-mm howitzers replaced an equal number of old 75-mm guns. But artillery leaders still considered a battalion of three batteries of four guns each adequate direct support for an infantry regiment in combat.

Nevertheless, developments outside the field artillery prompted a major shift from the traditional four-gun battery. In 1940 the Army began to form its first armored divisions in response to the success of the German panzer divisions. The structure of the armored division was the subject of much experimentation until a firm table of organization and equipment (TOE) emerged in 1942. Although this arrangement was to undergo radical changes in subsequent reorganizations, it established the six-gun battery organization, which was to remain stable under later TOEs. Specifically, each armored division had three armored field artillery battalions of M7 105-mm self-propelled howitzers. The impetus for the six-gun battery derived from two central requirements.

- The armored division needed increased firepower in its direct support artillery to offset its lack of any medium or heavy artillery battalions.
- The extra howitzers in the enlarged batteries would compensate for the reduced mechanical reliability of self-propelled artillery.

Such changes did not affect artillery battalions in the infantry divisions; these units went to war with four-gun batteries.

World War II

The demands of the war in Italy produced the next stimulus for increasing the size of artillery batteries. Although the Italian Theater placed a premium on firepower, it had a very low priority for reinforcement and support. Not only did the terrain of the Italian peninsula favor the defense, but the Germans exploited this advantage admirably by building numerous fortified defensive lines. Only *firepower* could force them out of these positions. In fact, combat in Italy came closer to World War I-style trench warfare than the fighting in any other theater. But unlike the Great War where artillery could be found in abundance, Allied artillery initially was in *short supply*. What's more, German artillery was far from negligible; and counterfire took a heavy toll on scarce Allied artillery assets. American leaders hoped that air power would serve as a substitute for artillery, but hard lessons from battles like Cassino proved that the need for artillery was as great as ever.

With the challenges of the Italian Theater in mind, the Artillery Section at the Allied Forces Headquarters undertook an analysis of US artillery resources. They sought answers to the *firepower* question in *general* and the *Italian problem* in *particular*. The data which the study produced was far from promising. The US forces had large amounts of artillery but not enough for the campaign they were fighting. The gravest shortages were in light and direct support artillery. The study found that the infantry divisions in the Italian Theater had only a quarter of the direct support artillery required for an offensive.

A solution to the artillery problem was far less apparent than the problem itself. The US Army in

A COMPARISON OF THE SIZES OF FIELD ARTILLERY BATTERIES AT DIFFERENT DATES

DATES	WEAPONS	PERSONNEL		
		Officer	Enlisted	Total
July 1943	4 105-mm howitzers	4	96	100
* August 1944	6 105-mm howitzers	4	116	120
May 1957	6 105-mm howitzers	8	121	129
** April 1983	6 155-mm howitzers SP	3	98	101
*** June 1986	8 155-mm howitzers SP	5	106	111

Notes:

* – effective in the 85th and 88th Infantry Divisions.

** – H-series TOE.

*** – The change from the H-series TOE is somewhat misleading because battery maintenance section is located in service battery under the J-series TOE.

Italy was caught on the horns of the same dilemma which affected US forces worldwide. On one hand there was the shortage of artillery; on the other hand, there was a serious personnel shortfall particularly in the other combat arms. Although the United States fielded an enormous number of combat soldiers, its support establishments consumed far more personnel than anyone had anticipated. The resultant personnel shortage caused great difficulties for all branches of the service. The insatiable need for infantry replacements consumed a large percentage of the newly trained personnel. This meant that there were only limited possibilities for expansion in the number of field artillery units.

The first solution proposed by the Field Artillery Section was to send eight additional 105-mm battalions to Italy as well as a small number of heavy artillery units. Although they approved some heavy augmentations, the War Department leaders turned down all requests for additional 105-mm battalions. Stymied, the Field Artillery Section searched for yet another approach that did not necessitate large personnel increases.

The success of the armored field artillery in Italy provided a possible answer. These battalions had six guns in their firing batteries. A similar organization for the batteries of towed, direct support 105-mm battalions promised a 50 percent increase in firepower with only a 20 percent increase in personnel. If approved, the change would yield the equivalent of ten additional 105-mm battalions in the Italian Theater. In May of 1944, the Section's proposal reached the War Department. In June of 1944, the Allied Forces Headquarters received permission to augment two division artilleries by forming six-gun batteries. They selected the 85th and 88th Infantry Divisions as the test organizations and began combat testing in August of 1944.

The testing was an immediate success. The commander of the 88th Infantry Division Artillery reported that six-gun batteries gave more effective support over wider sectors of fire. Furthermore, six-gun batteries could occupy any position which a

A COMPARISON OF THE FIREPOWER OF DIFFERENT BATTERY ORGANIZATIONS

BATTERY	NUMBER OF ROUNDS (1 Volley)	EXPLOSIVE WEIGHT
6 tube 105-mm	6	25.2 lbs
4 tube 105-mm	4	17.2 lbs
8 tube 155-mm	8	116.8 lbs
6 tube 155-mm	6	87.6 lbs
4 tube 155-mm (1 platoon)	4	58.4 lbs

The use of a four-gun 155-mm platoon represents almost a 350 percent increase in the amount of explosive weight.

four-gun battery could. More significantly, a *battery* could accomplish missions which had previously called for a *battalion* of massed fires. Another advantage of the new organization was that the loss of firepower due to the loss of a howitzer was reduced. A single howitzer now represented 16 percent of a unit's firepower as opposed to 25 percent under the old TOE. In December of 1944, the Fifth Army submitted the test results from the 85th and 88th Divisions with a strong recommendation that the change be implemented in all the 105-mm battalions field artillery-wide.

Post-War Developments

In the immediate aftermath of World War II, numerous conferences examined the lessons of the war and made recommendations on the shape of the future Army. A general board appointed by the commander of the European Theater examined the organization and equipment of the field artillery. This board recommended the expansion of all light artillery batteries to six guns in view of the successful tests. The board members pointed out the advantages of greater firepower and reduced personnel overhead. It also observed that because fire commands were now transmitted over the phone, control of two more pieces would not be a problem. Similar recommendations resulted from an artillery conference at Fort Sill in 1946. Attended by artillerymen and commanders from every theater, this meeting cited the advantages of the six-gun battery to engage multiple targets simultaneously.

There were occasional dissenting voices. One officer argued that a division artillery would find it very difficult to control the 54 light and 12 medium artillery pieces present in a future infantry division. Another officer pointed out that an expansion of the firing batteries would be self-defeating if other battalions were dismantled to provide the personnel and equipment for the expanded units. Nevertheless, the Army approved the expansion of the direct support artillery battalions in the late 1940s.

The size of the direct support artillery battalions remained at six guns per battery for over 30 years, but the

search for greater firepower went on. Studies explored ammunition types, alternate calibers, new weapon designs, and possible reorganizations. As a result, different types of shell-fuze combinations became available for the 105-mm howitzers. These new types of munitions helped the 105-mm howitzer meet the Army's fire support needs until the late 1960s.

At that time, analysis of the modern battlefield prompted the Army to change the primary weapon system of the direct support artillery battery to the 155-mm self-propelled howitzer. The lessons of the 1973 Arab-Israeli War and the analysis of the Soviet threat underscored the appropriateness of this change. The Army also introduced new munitions for the 155-mm howitzer, which enhanced artillery effectiveness without increasing the number of tubes. The 155-mm nuclear round was the ultimate expression of that idea.

The Current Situation

Beginning in the mid-1970s, field artillery combat developers undertook studies of the fire support requirements of division-sized units operating in a European environment. These studies showed that any future conventional conflict would require greatly increased amounts of artillery support. Once again, the Field Artillery Community found itself in a dilemma which paralleled the problems experienced in the Italian Theater during World War II. The Army needed more artillery support, but it could not form additional battalions because of personnel limitations.

The advent of digital fire control provided an answer to some of the problems confronting the artillery. The tactical fire direction system (TACFIRE) and the battery computer system (BCS), for example, served as the means for a battalion to control many smaller units with fewer operators. But *increasing* the number of *sections* in the battery organization provided the real answer. An increase of only two tubes per battery could effectively lead to the doubling of the number of firing units on the battlefield. The 3x8 concept, as it came to be known, is *essentially* a return to four-gun batteries; but it requires only half the personnel overhead of older organizations. The 155-mm self-propelled batteries reorganized under 3x8 receive a 33 percent increase in firepower and a significant increase in survivability with less than a 20 percent increase in personnel. When combined with the introduction of the multiple launch rocket system (MLRS), the 3x8 concept provides an effective solution to current shortages just as the six-gun battery did during World War II.

The continuing trend in field artillery developments over the last 40 years has been the demand for ever-increasing firepower. Personnel constraints have slowed this trend but not halted it. The standard direct support artillery battery of today's Army is

more powerful than a whole pre-World War II battalion, but its personnel strength is not much greater than the old four-gun battery.


The Future

It is always hazardous to predict the future, but certain trends in technological developments do make several conclusions unavoidable.

- The need for artillery will continue to grow, but the available personnel pool to man batteries will continue to shrink.

- Automation and on-board fire control devices will lead to more firing units manned by fewer soldiers. The multiple launch rocket system battery may well be the prototype of the organization of future artillery units.

Whatever the shape of artillery units in the future, the

mission of the field artillery will remain the same. Tomorrow's gunners will not repeat history, but they'll undoubtedly use it to grapple with the never-ending challenge of providing fire support to the maneuver arms. 

Captain Thomas C. Keenan, FA, is assigned to the 2d Battalion, 31st Field Artillery of the 101st Airborne Division (Air Assault) in Fort Campbell, Kentucky. He received his commission through ROTC at the University of Connecticut and is a graduate of the Field Artillery Officer Basic and Advanced Courses. Past assignments include company fire support officer and battalion ammunition officer with the 3d Infantry Division in Germany.

Right by Piece

NOTES FROM UNITS

When the Going Gets Tough

AUGSBURG, GERMANY—Life in the field during exercise Certain Sentinel was tough for most soldiers but not for the Redlegs of Service Battery, 1st Battalion, 36th Field Artillery.

"We lived high on the hog," said Captain Michael Schneider, Battery Commander.

The community in which the 1-36th FA stayed rolled out a red carpet for the soldiers. They not only served up two barbeques during the first week of the exercise, but also opened their school gymnasium so the troops would have showers and a warm place to sleep.

Captain Schneider was quick to point out that "The giving and sharing wasn't a one-way street. Our soldiers participated in a local blood drive. In fact, we gave one-third as much as the town. And many of the soldiers have been visiting the children at school and telling them about their hometowns."

The townspeople also presented small gifts—such as books and tapes—to all the soldiers at an awards banquet. In return, the soldiers gave certificates of appreciation to members of the community.

Life is tough for most soldiers in the field. But with the help of a friendly town, the 1-36th FA had an easier time during this REFORGER.



PFC Scott A. Allison of Battery A, 4th Battalion, 92d Field Artillery, United States Army Reserve, prepares an artillery round for firing during a field training exercise at Fort Sill, Oklahoma.

The "One Army" Way

FORT SILL, OK—For 4 days in April, National Guard and Army Reserve artillery battalions from Rhode Island, Pennsylvania, and Missouri, along with Active Component artillerymen based at Fort Sill, came together at the sprawling Oklahoma Army post—the home of the field artillery. Their aim was to conduct a field training exercise testing the "One Army" concept.

Dubbed Caber Valiant, the 11-14 April exercise brought more than 1,700 Redlegs together to operate as the 103d Field Artillery Brigade. "This is a unique exercise because it encompasses all three Army components, with a Rhode Island Army National Guard artillery brigade serving as the command and control headquarters," said Colonel Richard J. Valente, Commander of the 103d. "In fact, this entire annual training period has proved to be particularly valuable

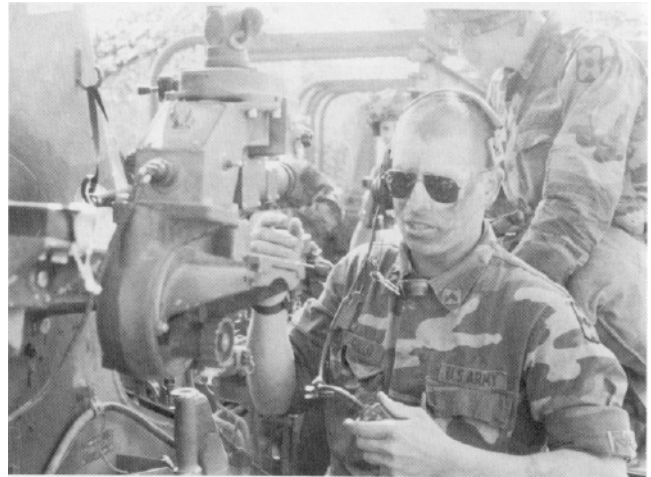
for each of our battalions because it has turned out to be a very realistic mobilization exercise. It has tested each of our battalion's abilities to move its soldiers and equipment great distances and then operate together effectively in the field."

As one example of the challenges involved in bringing the units of the 103d together for Caber Valiant, Colonel Valente noted that the Rhode Island battalions alone shipped more than 350 pieces of equipment, including 30 howitzers and over 200 vehicles, to Fort Sill. In fact, it required a train of flat cars that was more than 1½ miles long to get the equipment from Rhode Island to Oklahoma.

Using M198, M109, and M110 howitzers, the 103d Brigade fired approximately 4,000 artillery rounds, about half of which were expended as part of Caber Valiant. They also massed the fires of over 60 artillery pieces.

The field training exercise gave the units an opportunity to test their capabilities in day and night firing, movement, coordination of field artillery support, the combination of computerized and manual firing methods, rear area combat operations, and integration of Active Army and Reserve Component assets.

As a test of the One Army concept in action, "Caber Valiant was an unqualified success," Colonel Valente said. "We demonstrated that we can bring diverse units together far from their home stations, go into the field, and perform routinely. I doubt that most observers of the exercise could tell that we were operating together as a brigade for the first time."



Corporal Joseph C. Gullo, III, a gunner with Battery A, 4th Battalion, 92d Field Artillery, prepares to fire his howitzer during annual training at Fort Sill, Oklahoma.

Major General John W. Kiely, Adjutant General of the Rhode Island National Guard, visited the 103d and its subordinate units during Caber Valiant. He brought along a contingent of business executives representing companies in Rhode Island and Pennsylvania. The executives made the trip to Fort Sill as part of the national Employer Support of the Guard and Reserve (ESGR) program, which promotes cooperation between employers and the Armed Forces Reserve Components.

319 FA Regimental Division Activation

All former members of the 82d Airborne Division Artillery are invited to attend the 319th Field Artillery Regimental Activation Ceremony on 2 October, 1400 hours, Pike Field, Fort Bragg, North Carolina. The 82d Airborne Division Artillery is gratefully accepting all donations of flags, equipment, uniforms, and other memorabilia. Such

items will be preserved and appropriately displayed, and will be recognized.

For further information, contact the 82d Airborne Division Artillery Adjutant at commercial (919) 396-2525/6434 or AUTOVON 236-2515/6534.

Moving Out!

FORT RILEY, KS—The barracks and headquarters of the 2d Battalion, 5th Field Artillery will have some new tenants. The 4th Battalion, 5th Field Artillery is moving in when the 2d-5th FA leave town for Neu Ulm, West Germany.

This Redleg switch is part of the Army's cohesion, operational readiness, and training (COHORT) program. Designed to enhance combat effectiveness and nurture long-term ties among soldiers, the COHORT program allows a group of recruits to attend basic and advanced training as a unit and then stay together for 3 years. After

completing a tour of duty in the United States, the unit switches locations with a predetermined sister unit overseas.

Although the program has worked successfully at the battery level, the two 5th FA units are the first *battalions* in the Army to trade places. So preparation for the rotation is breaking new ground both in terms of combat readiness and family support. Despite these challenges, unit leaders believe they will be taking to Europe some of the best trained artillerymen in the Army.

Lieutenant Colonel Robin L. Elder, Commander of the 2d-5th FA, explained that his battalion has



(Photo credit) Robert Shipp

SSG William Seawel, 2d-5th FA, paints a muzzle break on an M109 in preparation to signing it over to the 4th-5th FA during their COHORT rotation.

undergone extensive training since it became a COHORT unit in 1984. "Our folks have been through an Army training and evaluation program, and we've been to the National Training Center. We went through a nuclear security inspection by Forces Command, and we participated in REFORGER this year. In fact, I think we're one of the best trained artillery units in the Army because of all we've been through since the battalion's formation."

Although close ties among the 2d-5th's soldiers derive in part from their basic and advanced training days, Elder believes his unit's intensive training schedule has also been important in building cohesion throughout the battalion.

"The battalion came together slowly," he explained. "One battery came in separately, and I still have 231 soldiers who were here when the battalion was formed. Now we have 563, but no one suffered in building this battalion. I think the training challenges have helped draw us together."

Others in the battalion share Elder's beliefs about the unit's combat readiness as well as the soldiers' sense of belonging. Command Sergeant Major Robert E. Calloway, Jr. observes "Many of these soldiers have been together since basic training. I think the COHORT program ensures the soldiers will feel more comfortable when they relocate. It will mean they'll have a shorter adjustment period when they get there. And we'll get even better because we'll be a tighter unit."

For some members of the unit, cohesion takes forms that no amount of planning could have predicted. Two of the battery commanders—Captain William Vogt of Headquarters and Headquarters Battery and Captain Kevin Kinder, Battery A—grew up together in Festus, Missouri. What's more, the training sergeant for Headquarters and Headquarters Battery is from Festus.

Beyond this unusual example of the unit's cohesiveness, both commanders speak highly of the soldiers' attitudes toward the move. "Most guys are excited about the rotation," Vogt said. "And the families are excited too. We're probably tighter than most units,

and I think we'll be able to accomplish more as a battalion."

Although developing combat readiness has been the battalion's primary goal since its formation, another very important objective involves the smooth movement of family members to Neu Ulm. In fact, such concerns are one of the differences between a battery and battalion-sized COHORT unit. "You may have 50 families in a battery-size move," Calloway noted. "We have 237."

To ensure that family members are prepared for the move, the battalion began an educational effort about a year ago. The unit's leaders started a newsletter sent directly to spouses. The unit also conducted a briefing program throughout the year and put together a family member briefing book which provided procedural guidelines and a detailed plan for preparing for the deployment.

"I think our program for the families has been a tremendous success," Elder said. "The informational meetings, the newsletters, the Head Start classes—all have helped the soldiers and their families."

The unit even brought a briefing team from Neu Ulm to discuss education, finance, housing, and civilian employment at the battalion's new duty station. Most family members will arrive in Germany already licensed to drive; their housing will be ready to occupy; and they will have a basic understanding of German customs and language.

"Everybody has been terrific in helping us get our families ready to move," said Specialist Four Charles A. Pettit of Service Battery. "Everybody in the unit is well-informed. And we've had tremendous cooperation from the transportation and Adjutant General's offices. All you've had to say is 'COHORT,' and they knew what needed to be done."

Today an enthusiasm permeates the entire battalion. As Captain Vogt says, "Officers walking in the battalion are likely to hear 'CONU (Come On Neu Ulm), sir,' along with a sharp salute."



Firepower and Maneuver in the Second Indochina War

by Lieutenant Colonel Robert H. Scales, Jr.



Senior Colonel Ha Vi Tung was Chief of Staff of the North Vietnamese Military Region IV in the Central Highlands. His area of operations began in Cambodia, cut across the midsection of South Vietnam, and ended at the South China Sea. A small man with deeply weathered features, Ha was a proven veteran of many battles with the French. His new task in 1965 was to drive his fresh division in a sustained advance through the Central Highlands with the ultimate objective of cutting South Vietnam in two.

From his sanctuary in the heavily forested Chu Pong Massif, just west of the Ia Drang Valley which straddled the Cambodian border, Colonel Ha meticulously planned the upcoming campaign. He cautioned his staff that an

operation of this magnitude might oblige them to fight large American units for the first time. In fact, his plan centered on the destruction of a Special Forces camp at Plei Me, manned by a constabulary of 300 Jarai Montagnard tribesmen and 10 American advisors. Ha had two first-rate regiments available for the operation—one would seize the camp and the other ambush the column that the South Vietnamese would certainly dispatch to relieve the besieged garrison. Just in case his initial assault was not successful, Ha would also deploy a battalion of heavy antiaircraft machine guns along expected flight routes to protect his soldiers from marauding aircraft.

By 19 October 1965, Ha and his staff had moved within a few miles of the camp and established a radio link to the

attacking regiments. That same evening his troops opened the battle by surrounding Plei Me and closing in for the kill.

The Initial Battle for the Ia Drang

By midnight, Captain Harold Moore, the American commander at Plei Me, knew he was in deep trouble. His camp was being hit from all directions. Mortar and recoilless rifle fire was continuous. Because there was no friendly artillery within range, Moore had to radio for close air support.

By 0400 hours a forward air controller (FAC) aboard a C-123 flareship began bringing in air strikes just as



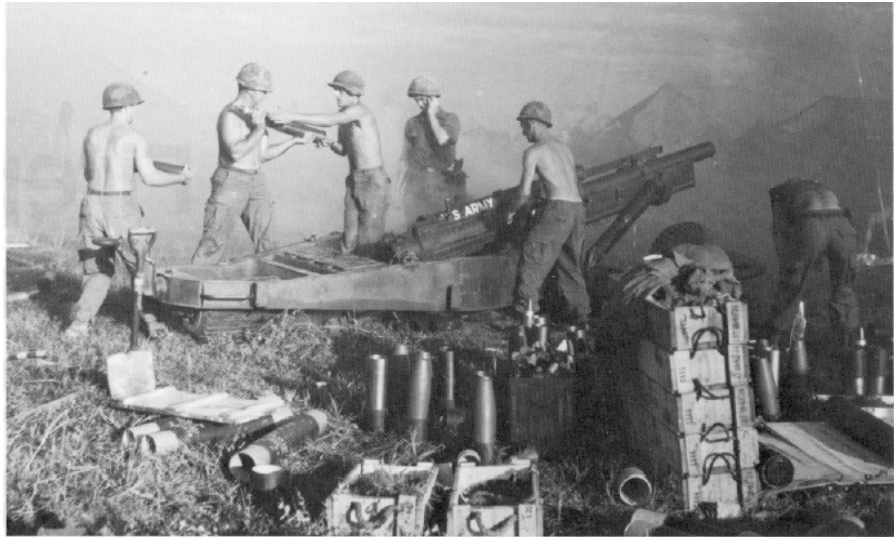
Helicopters provided a distinct tactical advantage to artillerymen in Vietnam.

enemy soldiers began their first coordinated assault. Under the watchful eye of the FAC, a continuous procession of pilots dropped napalm and bombs within yards of the illuminated perimeter. Air Force Colonel Edsel Manning, Air Liaison Officer for the II Corps Tactical Zone, had scrambled US Air Force and Vietnamese airpower from every corner of the central region as well as Navy and Marine fighters from carriers off shore. In fact, by early morning on the 20th the skies over the camp were a very busy place. During peak hours, FACs stacked up aircraft and sent them in singly or in pairs to ensure that bombing and strafing runs were synchronized, precise, and continuous.

But for the pilots of the four participating air forces flying eight types of strike aircraft, this was no turkey shoot. Senior Colonel Ha's "flak traps" began to score kills when a UH-1B "Huey" went down east of Plei Me with all four crewmen lost. Later the same day heavy machine gun fire struck two B-57 bombers; one went down and the other was forced to divert to Plei Ku airfield for repair. During the next two days two more fighters and another helicopter would go down.

Just as Colonel Ha had predicted, the South Vietnamese dispatched an armored column to relieve the Plei Me garrison. And right on schedule it tripped an ambush 5 miles from the objective. For 2 hours mortars, recoilless rifles, and automatic weapons took a heavy toll of government troops.

From a tactical viewpoint, both the siege and the American response held few surprises. The enemy soldiers carried out their attacks with customary alacrity and precision, and the Americans had made maximum use of available firepower. However, as the battle progressed, Colonel Ha had become increasingly alarmed at the price he was paying due to Allied airpower. From intercepted radio transmissions and captured prisoners came a description of growing confusion and panic on the enemy side.



Artillery pieces like this M102 in the 3d-13th Field Artillery provided the backbone of firepower in Vietnam.



With plentiful fire support from artillery units, helicopters, and tactical aircraft, many units neglected their organic weapons such as this 1st Cav 81-mm mortar.

Colonel Ha did not expect American aircraft to attack at night, nor was he prepared for such a furious and sustained aerial bombardment. Just maintaining pressure on Plei Me had cost him half a regiment in 2 days. Eighty tons of aerial ordnance steadily drained his force and ultimately made a final assault impossible. In fact, after 4 days of fruitless effort, Colonel Ha reluctantly pulled his battered regiments away from their exposed positions around Plei Me and ordered them westward, back to the sanctuary of Chu Pong Mountain. The enemy had experienced the concentrated effects of American firepower for the first time. And for the first time the siege of an isolated fortress had been broken by airpower alone.

The 1st Cav Joins the Fight

On the evening of 27 October, General Westmoreland visited An Khe, the headquarters of the newly arrived 1st Cavalry Division. He reviewed the recent engagement at Plei Me and instructed General Kinnard, the Division Commander, to embark on a campaign to destroy Colonel Ha's soldiers as they withdrew. Circumstances were perfect for Kinnard's style of airmobile combat. The trackless route back to Cambodia was no impediment to the Division's complement of 476 helicopters. And the aggressive Kinnard proposed to devote an entire brigade to search for the enemy. Individual companies and platoons would leapfrog by helicopter between suspected enemy locations to conduct brief searches all the while protected by armed helicopter gunships and artillery.

Kinnard air assaulted his mutually supporting artillery batteries into the huge battle area by helicopter ahead of the infantry so that the maneuver force would have firepower from the moment it touched down. At first glance, such tactics appeared to scatter infantry platoons and artillery batteries across a wide expanse and to leave the total force vulnerable to defeat in detail. But first impressions can be deceiving. Kinnard's intention was to draw the enemy into a fight and then to use his helicopters to move the scattered units to the sound of the guns in only a matter of minutes.

General Kinnard emphasized time and again that *contact* was the name of the game. Terrain had little tactical value in this style of war. He instructed his soldiers to seek contact in any form—a helicopter receiving ground fire, a warm campfire, beaten



The 1st Cavalry established this "Kinnard-style" fire base near An Khe in September 1966.

down grass, any sign that would indicate the presence of the enemy. Platoons became the matador's cape—seemingly vulnerable and waved in the face of the enemy—but in reality they were a ploy to draw the enemy into decisive combat. *Firepower* provided the sword behind the cape. Hidden carefully and raised at the appropriate moment, guns and airpower in the hand of a skilled matador would do the killing.

Kinnard began his hunt on 28 October. Immediately, the seemingly random helicopter assaults began to interfere with Colonel Ha's efforts to collect his regiments. Rockets and machine gun fire from helicopters harassed the North Vietnamese. Occasional airstrikes added to their growing confusion. Finally, on 1 November the Americans got their first major break when a platoon landed on the aid station of the 33d Vietcong Regiment, just a short distance east of Colonel Ha's headquarters. In the ensuing firefight, 100 Vietcong soldiers died. On 3 November cavalry troops landed at the foot of Chu Pong Mountain. That evening the Americans ambushed an enemy patrol, killed dozens, and subsequently held off a battalion counterattack with the help of rocket-firing helicopters.

By 10 November most of the remaining Vietcong force had run the aerial and firepower gauntlet to safety in Cambodia. The cost of the siege and the withdrawal had been enormous. The two regiments could assemble only half their original strength.

Colonel Ha was too much the professional to surrender the initiative without another fight. In the relative

quiet of his mountaintop refuge, Ha assembled his regimental commanders, including the leader of the fresh 66th, and planned a renewed attack. For reasons which remain obscure, Ha chose to mount another set-piece attack against the Plei Me Special Forces Camp. In fact, he planned to commit all three of his regiments to the effort and added a battalion each of heavy mortars and 14.5-mm twin-barreled antiaircraft guns. For the next 5 days the North Vietnamese Army (NVA) unit prepared for the attack—their first full-fledged divisional operation in South Vietnam.

Unknown to the NVA, General Kinnard had also decided to renew his

offensive. On 13 November, 28 lifts of CH-47 helicopters placed 2 artillery batteries at Landing Zone (LZ) Falcon, miles east of the Chu Pong Massif. At 1030 hours the next morning Lieutenant Colonel Harold A. Moore, commanding the 1st Battalion, 7th Cavalry, began landing three companies on Landing Zone X-Ray, a small clearing at the foot of Chu Pong Mountain and right in the midst of the enemy division on its way to attack Plei Me. The ground around X-Ray was flat, with trees up to 100 feet tall, thick elephant grass, and anthills scattered about.

The battle for LZ X-Ray began the moment the first helicopter touched down. By early afternoon all companies of the 7th Cavalry were heavily engaged. Arriving helicopters were taking hits, and the enemy was attacking the landing zone furiously from every direction. By midafternoon Colonel Moore knew that his battalion was in a fight for its life. Just before dark he pulled all of his forces, except for a single platoon, into a tight perimeter. Incredibly, the platoon with only 12 soldiers alive and unwounded would remain isolated for 2 days, surrounded by the enemy but protected by a barrier of *firepower*.

As evening approached, the NVA began attacking in larger formations. Wave after wave of determined soldiers threw themselves against the perimeter. During the long night that followed, the two batteries from LZ Falcon fired over 4,000 rounds in support of the besieged cavalymen. Forward observers "walked" exploding



An early B-model Huey gunship looks for action.

rounds so close to the perimeter that hot shell fragments whistled over the heads of friendly troops.

The attack intensified early the next morning. Enemy fire became so accurate that the forward observer with the most hard-pressed company found himself pinned down and unable to observe. Fortunately, the artillery officer located in Colonel Moore's command post could see the fight, and from his distant position adjusted artillery and airstrikes around the company. Combat soon became so confused that it was difficult to tell friend from foe. For a moment Colonel Moore feared that the LZ would be lost. But he was determined that history would not repeat itself: "It certainly entered my mind that we were the 7th Cavalry Regiment," he recalled, "and by God, we couldn't let happen what happened to Custer."

At 0800, he ordered each of his platoons to throw a colored smoke marker so that air and ground observers could see the precise outline of his perimeter. Then he ordered all fire support brought in extremely close. Soon the artillery formed a protective curtain of steel too intense for the enemy to penetrate. Colonel Moore noted that on one occasion white phosphorous artillery shells proved particularly effective at halting the enemy. Apparently the 66th had never experienced the smoke and burning effect of "WP." Its sudden appearance seemed to have an extraordinarily debilitating psychological effect.

With the perimeter clearly marked by smoke, helicopter gunships were also able to enter the fray. Heavily loaded Huey attack helicopters rolled in repeatedly to deliver machine gun fire right on the edge of the perimeter. What's more, throughout the critical

40 hours at X-Ray, the Air Force maintained tactical aircraft constantly on station with a fighter-bomber on a target run every 15 minutes. And during periods of desperation, aircraft risked destruction by flying through plummeting artillery shells and small-arms fire to deliver napalm and fragmentation bombs.

Such unrelenting supporting fires gave the isolated defenders the reassurance they needed to continue the fight. But General Kinnard's goal was to *win*. On 15 November, when enemy pressure slackened somewhat he sent 2 more batteries of light artillery to LZ Columbus, a firebase hastily cut out of the elephant grass only 5 miles northeast of the fight. Lifts of Chinooks, carrying hundreds of rounds slung underneath in a large nylon cargo net, shuttled continuously from base camps to the new firebase without interference from enemy or terrain.

Kinnard also arranged even more exotic treats. Shortly after noon on the second day of the fight for LZ X-Ray, Colonel Ha and his staff saw a large area to their immediate south suddenly erupt in a fiery carpet of thunderous explosions. The first B-52 strike in support of a tactical fight had landed squarely on Ha's rear area. Additional strikes continued along the Chu Pong Massif for the next 5 days. Rumors spread throughout Ha's three regiments that these "carpets" covered 20 square kilometers and that ordinary trenches and foxholes offered no protection.

Colonel Ha tried X-Ray once more on the 16th, and again found himself immersed in a blood bath. Preceded by a moving wall of artillery shells, the Americans pushed outward toward the NVA positions. After 3 days of fighting, Ha's death toll exceeded 1,000. Firepower once again had prevented his victory.

After the X-Ray fight, Ha realized that a prepared infantry perimeter with plentiful artillery was too tough a target. He concluded that the real source of his failure had been the supporting artillery batteries positioned in lightly defended landing zones to the east. He reasoned that an attack there might kill more American soldiers and eliminate the enemy's most devastating source of killing power. So on 16 November, he ordered the 66th Regiment to move toward LZ Columbus and destroy both batteries of artillery positioned there.

Official History of 'Nam War

by Mr. Charles B. McKeown



The US Army Center of Military History is now publishing in a multivolume series the authoritative history of the Vietnam War. These books will be the Army's official account of the war and will record the rising and falling tides of America's involvement in Southeast Asia.

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Coincidence again played a pivotal role in the battle. On 16 November, helicopters lifted Colonel Moore's tired and battered soldiers out of X-Ray and replaced them with two new battalions, the 2-7th and the 2-5th Cavalry. In keeping with the axiom that "terrain without enemy on it was of no value," General Kinnard ordered the two fresh battalions to abandon LZ X-Ray and close on Columbus to protect the artillery. The 5th Cavalry unit left X-Ray first and closed on Columbus by noon. But the 7th Cavalry left later and traveled by a different route, which led across the path of the 66th Regiment. Unfortunately, the 66th had a 20 minute headstart.

Shortly after noon the enemy commander halted his unit a mile or so short of LZ Columbus for a lunch break. Immediately, his outposts reported that a large American column was approaching. With no time to spare, the NVA leader ordered his units into an improvised ambush. Quickly, many of the experienced jungle fighters lay themselves flat in the elephant grass. Others climbed trees to get a better shot. None were under cover. The cavalymen were practically within sight of Columbus when the enemy opened fire. The horror and heroism of the next 6 hours has rarely been equalled in American wars. Within seconds of contact the enemy soldiers were in the midst of the cavalymen. Fighting was hand-to-hand. Within minutes hundreds of intermingled Vietnamese and American dead and wounded littered the open meadow that came to be known as LZ Albany.

Artillerymen only a short distance away listened to frantic radio calls for fire from artillery observers, but were unable to respond for fear of hitting friendly soldiers. Aircraft and helicopters darted in and out of the kill zone but could not find the enemy hidden in the elephant grass.

By early evening the worst was over. A few leaders rallied the remaining soldiers into two perimeters. The survivors marked positions with smoke and called protective fires throughout the night. The next morning the enemy withdrew, leaving behind 400 dead. But in only a few hours, the 7th Cavalry had suffered 157 fatalities—two-thirds of all those lost by the Division during the campaign. To Senior Colonel Ha, the lesson was clear: surprise the Americans and separate them from their firepower, then the battle becomes an even match.

The Pivotal Role of Firepower

This fight between regulars established a precedent which increasingly came to characterize American combat in Vietnam. To be sure, guerrilla-style warfare was still common, but by 1965 the enemy had formed large units capable of escalating the conflict to the conventional stage of revolutionary warfare. US strategy centered principally on the destruction of these larger Vietcong and North Vietnamese forces in the hope that the respite gained would allow the South Vietnamese Army to carry on the less intense aspects of the war.

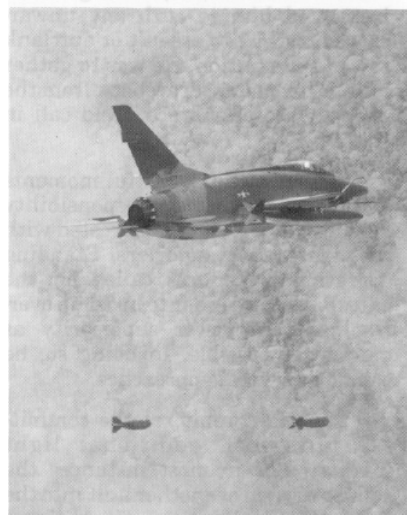
The North Vietnamese were a patient enemy willing to accept enormous battlefield losses to achieve political victory. The words of Ho Chi Minh to the French continued to haunt those who saw enemy casualties mount without appreciable progress at the peace table: "You will kill 10 of us and we will kill 1 of you and in the end it will be *you* who tire of it." General Giap, who directed the overall North Vietnamese military effort, stated unequivocally that "the minimum aim of the Vietcong is not to fight to the bitter end but only to the point that the enemy can be brought to the conference table and there defeated." So, ironically, both sides accepted the consequences of attrition warfare, but the enormous difference in political resolve and cultural stoicism between antagonists meant that US firepower had to maintain, or perhaps even surpass, Ho Chi Minh's 10 to 1 ratio in order to stand any chance of strategic success.

Infantry could not hope to achieve kill ratios as disproportionate as these without a great deal of outside support. In fact, the fighting ability of infantry units on both sides was about even. The enemy's cunning, capacity for hardship, and skill with camouflage balanced the flexibility, initiative, and technical skill of the Americans. Infantry weapons carried into combat were about equal in quality on both sides.

Although the enemy may have had an advantage in the reliability and power of his automatic weapons, the Americans generally were able to carry and expend a greater volume of ammunition in a firefight. Helicopters helped in great measure by freeing infantry from the "tyranny" of inhospitable terrain. But once the American infantryman was separated from his carrier and on foot,

one side was as mobile as the other.

The lesson of Plei Me and the other engagements in the Ia Drang was that the decisive factor in the tactical contest would be *firepower*. If the Americans could bring artillery and airpower to bear quickly and effectively, the advantage was theirs. As Colonel Ha had determined, the enemy's wisest tactics became to separate the Americans from their source of firepower or to strike quickly and withdraw before incoming firepower shifted the odds against them.



Most combat SOPs called for the immediate reinforcement of units in contact with artillery, attack helicopter, and tactical air strikes.

A Question of Tactics

The Ia Drang also taught that an enemy who wished not to fight could only be brought to battle by a methodical search using many small units, usually platoons, spread thinly over a wide area likely to conceal the enemy.

This meant that an often inexperienced lieutenant, isolated in the jungle with his platoon, became the leader most directly responsible for finding and fixing the enemy. Major General William Depuy, Commander of the 1st Infantry Division in 1966, understood the lieutenant's plight and published a simple, yet comprehensive regulation which told small unit leaders how to fight in Vietnam. Variations of the Big Red One's regulation soon became standard in other divisions, differing only to accommodate local variations in terrain, enemy capabilities, weapons, and equipment.

The regulation warned leaders to take great care when searching dangerous territory and to move in a formation which exposed the least number of men to an initial contact. A firefight would begin with a furious exchange of rifle and machine gun fire. It might be triggered by two opposing point men stumbling into each other and opening fire at point blank range. In the first terrifying moments of the firefight the lieutenant had to concentrate on keeping his unit alive and intact until reinforcement arrived. In fact, the regulation instructed him to curb any unwarranted instinct to assault or outflank the enemy position. He was to gather isolated elements, draw back from the enemy's "close embrace," and call in firepower.

After the initial frightful moments of the engagement, the responsibility for survival of the platoon rested with the lieutenant's superiors. Standing operating procedures called for the battalion commander to build up overwhelming firepower superiority as quickly as possible. In doing so, he could use several approaches.

- He might reinforce the committed unit with additional light infantry. But in most instances the sudden arrival of another unit into the fight raised the risk of additional casualties.

- He might send a mechanized infantry unit cross-attached with armor to the rescue. But such units had to make time consuming ground movements; and as the battle for Plei Me demonstrated, a road-bound relief force might well become a victim of a carefully laid ambush.

- Most divisional instructions dictated that immediate reinforcement of the firefight would come from artillery, attack helicopters, and tactical air.

In a remarkable 1969 Army War College study titled *The Dynamics of*

Fire and Maneuver, the comments of 200 returning commanders underscored the desirability of the latter approach. Overwhelmingly these veterans concluded that *firepower dominated* the battlefield. An infantry commander maneuvered his units to achieve two objectives: To find the enemy and place his unit into the best position to ensure that firepower could do the killing. They agreed that maneuver forces should engage the enemy at the maximum effective range of their organic weapons, usually 200 to 300 yards in thick terrain.

The study also criticized the training and indoctrination of new commanders. It implied that many leaders were unfamiliar with the true nature of the war and were unprepared to integrate and control the abundant fire support available.

Firepower Versus Maneuver

Today, military professionals are besieged by claims that too much reliance on firepower will adversely affect the aggressiveness and elan of maneuver soldiers. But the 1969 study concluded quite the contrary. It

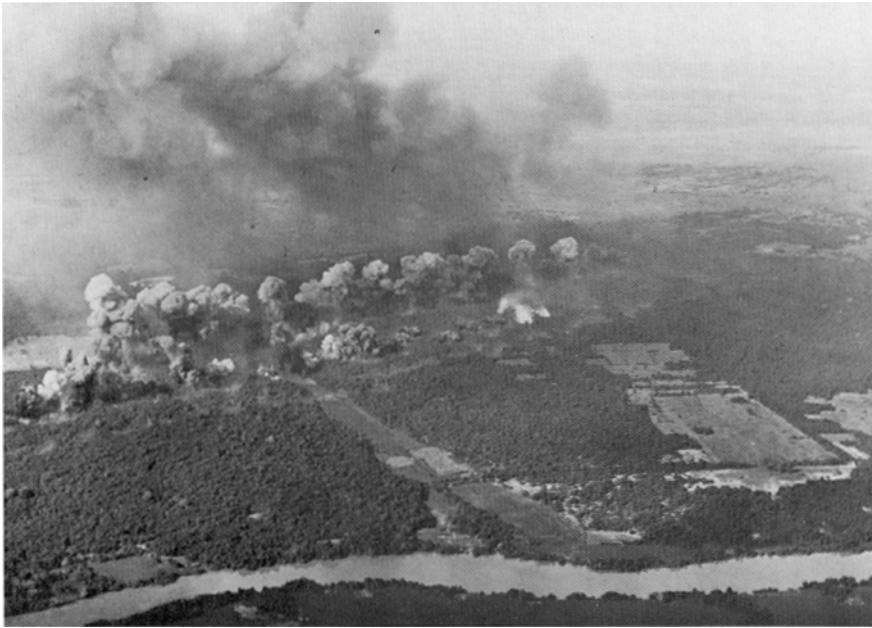
stated that large doses of firepower bolstered the confidence of the infantry by demonstrating graphically the superiority of the killing potential at their command. The knowledge that so much support was available made soldiers all the more spirited and aggressive when tactical circumstances necessitated an assault. The study also concluded that massive firepower was one means of compensating for the limited training of young infantrymen. Each soldier came equipped with an exhaustible "well of courage" which leaders could draw upon whenever necessary but which they should conserve by substituting firepower.

Not all commanders in Vietnam agreed that a firepower-intensive tactical approach was appropriate for all occasions. Colonel C.K. Nulsen had been an advisor to the South Vietnamese rangers, and he worked with them in War Zone D 2 years before the arrival of major American units. He succeeded in persuading the regional Vietnamese military commander to teach his rangers how to fight in the jungle using *stealth* and *initiative* rather than firepower.

Nulsen insisted that the ranger was just as good in the jungle as the Vietcong. With training, experience,



Fortified fire bases became commonplace in the later stages of the war.



A B-52 "Arc Light" strikes in War Zone D, north of Saigon.

confidence, and leadership, the ranger could meet the enemy head-on and defeat him at his own game. Firepower was important, but it was most useful as a last resort to tip the scale in favor of the government forces once the battle was joined.

Nulsen later commanded a US battalion in the 196th Light Infantry Brigade attached to the 25th Division and attempted to foster the same knowledge of field craft and self-reliance in his American soldiers. When given the opportunity, he slimmed his companies down to 70- or 80-man units capable of moving quickly and quietly through the jungle. He taught them how to hide from the Vietcong, move at night, and hit the enemy in surprise attacks. Nulsen kept his companies in the field for long periods without resupply and sent them back to the same area time and again to ensure that each company knew every facet of its area of operations. Whenever possible, he kept his companies hidden, moving them at night to set up numerous small-scale ambushes. The results were rarely spectacular. Infantry squads were sometimes able to surprise small enemy units and a short, vicious firefight ensued lasting only a few seconds. The engagement was over before supporting fires could be delivered. While not dramatic, the cumulative effect of numerous small skirmishes was a favorable kill ratio and an enemy force robbed of the tactical initiative.

Nulsen's views and methods were shared by other commanders. By mid-1969, the battalions of the 9th Infantry Division in the Delta region

began shedding conventional war accoutrements and took to the swamps to fight the enemy on his terms. The 4th Battalion, 39th Infantry prided itself on being a "guerrilla battalion, US style."


The US battalion readied itself for combat. Holes weren't bored in the sky by helicopters circling over the target. Nor was artillery and tactical air placed blindly on red dots on the map marking Vietcong locations. Helicopters weren't hastily assembled for an ill-planned airmobile assault. The battalion knew that the enemy would be gone slick as a whistle before the lead ship set down on the landing zone. Experience had taught this lesson well....Only guerrilla tactics augmented by US firepower can defeat the enemy at low cost.

Brigadier General Willard Pearson, commanding the 1st Brigade, 101st Airborne Division, employed Nulsen's "lighter touch" with firepower—but on a grander scale. "We believe we should outfox...[the enemy], out-guerrilla him," Pearson said, "Once control is established, we can throw off our own guerrilla cloak and react violently, destroying him with superior firepower and mobility." As the quotation implies, Pearson was not adverse to using large doses of firepower whenever the enemy was found and fixed, but he most certainly believed that restraint in the use of firepower was a virtue and not a vice.

Conclusion

Pearson's guerrilla style of infantry tactics would have been impossible for General Kinnard's 1st Cavalry when it came up against the concentrated mass of an NVA division in the Ia Drang Valley or faced a well-armed, entrenched foe in a base camp. However, commanders like Nulsen and Pearson were also right when they pointed out that under different circumstances the imperative to trade firepower for manpower had grown so pervasive that it interfered with the ability of the infantry soldier to do his job. They understood that in American wars the balance between fire and maneuver has traditionally tipped in favor of the former.

In Vietnam, more than any other war in American history, the preservation of soldier's lives was the overriding tactical imperative. Faced with these new and exacting standards, most field commanders were unwilling to deviate too far from accepted tactical methods. They preferred the safer course and endeavored to keep a shield of protective firepower around their troops whenever possible. In the battles to follow, these realities placed increasingly greater constraints on infantry maneuver. The only practical alternative was to employ firepower in massive quantities and give it primacy over maneuver.

These experiences were undoubtedly sources of the reaction against firepower so common in today's professional journals. Fortunately, history makes it abundantly clear that both firepower and maneuver are essential in virtually any winning effort. 

*This article is a condensed version of a chapter to appear in **Firepower in Small Wars** to be published by National Defense University Press.*

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