



# Field Artillery

A Professional Bulletin for Redlegs

December 1987



## The Red Book



## An Annual Report



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# Field Artillery

*A Professional Bulletin for Redlegs*

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**PURPOSE** (as stated in the first *Field Artillery Journal* in 1911): "To publish a journal for disseminating professional knowledge and furnishing information as to the *Field Artillery's* progress, development, and best use in campaign; to cultivate, with the other arms, a common understanding of the power and limitations of each; to foster a feeling of interdependence among the different arms and of hearty cooperation by all; and to promote understanding between the regular and militia forces by a closer bond; all of which objects are worthy and contribute to the good of our country."

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*Field Artillery*

# Field Artillery— King of Battle

## Welcome to your 1987 Field Artillery Red Book

This second-edition annual report contains valuable information covering the issues of concern to the Field Artillery family. We have interviews and unit and weapons systems overviews and a very thought-provoking article about Field Artillery Medal of Honor winners. We want you to use this edition as a reference and guide for many of your Field Artillery needs. The Red Book is the Field Artillery's "State of the Union" address to Redlegs around the world.

To give you a view of the King of Battle as seen by those in charge, we went to Washington, D.C., to interview General Carl E. Vuono (Chief of Staff of the Army) and SMA Julius W. Gates (Sergeant Major of the Army). They spoke candidly about the state and future of our Armed Forces and presented their opinions about professional soldiering. Also, Major General Raphael J. Hallada (Commanding General of the Field Artillery Center and School and Chief of Field Artillery) provided his philosophy and direction for all Field Artillerymen in his article.

Most of this edition, however, deals with you, Army and Marine Corps Redlegs, your units and weapons systems and the present and future missions of the Field Artillery. We've compiled a review of all Field Artillery School and division and corps artillery unit activities, as well as an overview of the US

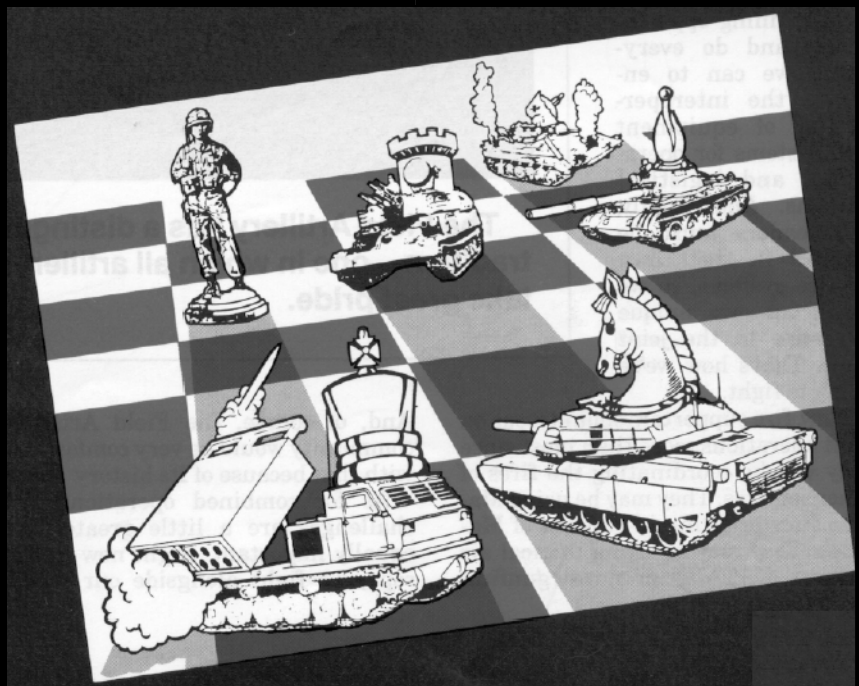
Marine Corps Artillery mission and equipment. Here, you'll find out what your fellow artillerymen are doing to enhance the King of Battle. Wrapping up this section is a complete listing of active duty. Reserve and National Guard commanders, their units and geographic locations around the world.

Our "Fire Support in the 21st Century" article deals with the direction of the Field Artillery on the battlefield of the future. Tied in with this is a synopsis of all major Field Artillery systems in today's Army and Marine Corps. In short, we plan to expose you not only

to conventional munitions, smart munitions, missiles and rockets, but also to laser technology, robotics, artificial intelligence and much more.

And if you're interested in being assigned to a unit you read about here or if you're concerned about the progress of your career, just turn to our "Redlegs' Career Update."

As you can see, we've presented the full spectrum of the Field Artillery, and we're sure you'll find the Red Book interesting and indispensable. We couldn't have done it without your support.



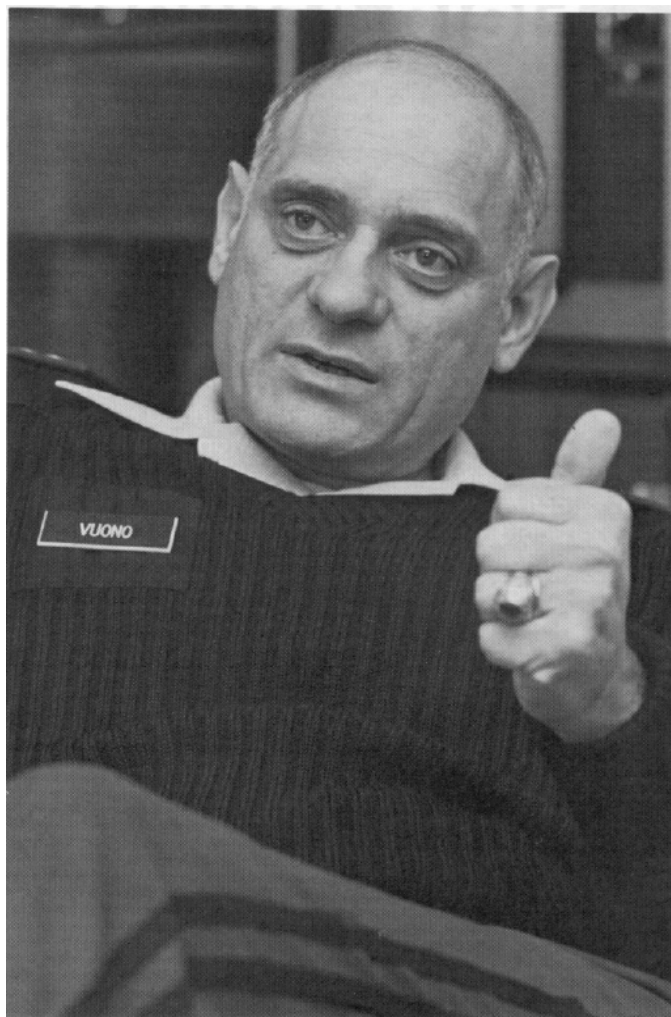
Chief of Staff of the Army General Carl E. Vuono

# The Chief Speaks to Field Artillery

*What is driving the current focus on joint and combined operations, and what do you see as the implications for the fire support community?*

It's important to understand why joint and combined operations are vital to us. The United States is a global power and, as a global power, we have responsibilities under certain circumstances to support other nations with a multiservice force. That support has been rendered in World War II, Korea and Vietnam, for example—not just with the fire support community, but the entire Army as part of a joint force. And so our job is to ensure we develop joint doctrine. We must take advantage of joint training opportunities and do everything we can to enhance the interoperability of equipment and systems for operational and logistical reasons. And finally, our leaders must be steeped in their own service systems, so we bring our own unique expertise to the joint force. That's how we're going to fight.

Now, fire supporters should focus on joint operations more than most since they will be coordinating the fires of other services. They may be using Marine fires or firing in support of Marines. They may be using tactical air support (TACAIR) or naval gunfire.



**The Field Artillery has a distinguished tradition—one in which all artillerymen can take great pride.**

And, of course, the Field Artillery community would be very comfortable with that because of its history.

As for combined operations, the challenges are a little greater but equally important. Right now in Europe, we fight alongside our NATO

allies in the Central Region. We just finished REFORGER [return of forces to Germany] this year up in NORTHAG [Northern Army Group]. The same challenges, or greater, are there in terms of interoperability. The more we can train together, the more we can pull our doctrine together, understand the significance of combined operations and, above all, build interoperability into our equipment. These lead to success on the battlefield.

*What are the Field Artillery's specific requirements associated with the low-to mid-intensity arena?*

First, it's an arena that is extremely important to us today. In terms of fire support, the principles do not change when you fight low-, mid- or high-intensity. But, there are some unique challenges associated with the low- to mid-intensity end of the spectrum.

Our equipment must be lighter. The efforts on the M119 British

light howitzer are one step in the right direction. [The Army currently is buying 100 M119 howitzers with a total requirement for 548.] We must get as much range as possible out of the lightest system possible, and the proper mix

of ammunition you use in the smaller-caliber weapons is important.

Mobility is important in low-intensity conflict. We need the ability to use helicopters for moving systems and resupply.

Finally, the Army must push technology and see what there is, not just for howitzers and munitions, but also for command and control systems.

*The Soviets historically have relied upon large amounts of indirect fire to support their maneuver forces. As they modernize, they continue to increase the number of their cannon and rocket systems and artillery units. General [Glenn K.] Otis [Commander of Central Army Group, US Army Europe and 7th Army] told Field Artillery several months ago in an interview that the enemy's indirect fire support is the toughest, most difficult threat he faces. How should the Army redress this imbalance in artillery between NATO and the Warsaw Pact?*

We must strike the enemy's indirect fire systems or any of his key elements as far out as possible to prevent him from getting into a position to harm us. That's the essence of our deep attack concept. I think what we're trying to do with Army tactical missile system (ATACMS) and joint surveillance and target attack radar system (JSTARS) is very important.

Field Artillery plays a big part in integrating this effort. We must locate key areas where the enemy will put his field artillery and, as it gets in position, attack it with both TACAIR and ground systems. That's why we're trying to bring launch and deep acquisition and attack systems on line for the Army.

Another combat multiplier is agility. The ability of the Army to move more quickly, so we don't present such a vulnerable target, is pivotal.

Improvements in our target acquisition systems will allow us to locate the enemy much more precisely than we have in the past—again, to pinpoint where he is so we can provide the data the killing systems need. As we do our intelligence preparation of the battlefield, our leaders must be aware of the enemy's tremendous capabilities: the tubes of the Soviet artillery.

*The National Training Center (NTC) is recognized as the finest, most realistic training experience for our mechanized forces. Now that we have had several*

*years of experience at NTC, what do you believe are the most critical lessons our Army is learning there?*

The NTC is the best training opportunity we could have short of combat—the most realistic, challenging and demanding. The lessons we've learned will benefit not only the heavy forces but also our light ones. Those lessons apply as we develop the Joint Readiness Training Center in Arkansas. US Army Europe (USAREUR), too, will establish its Combat Maneuver Training Center for European-based units.

I guess the most significant lessons I've alluded to before. One is understanding you're not going to be successful on the battlefield if you don't fight as a combined arms team. Two, you're not going to be successful if you don't understand how to integrate combat power. You see that clearly when you're out there. Those who understand these points are successful.

Three, is an appreciation of the pace of battle. In the fast-paced battlefield environment, it's critical all elements of the combined arms team pull together as a team. Once one element falls behind, it's never going to catch up, and the team is not going to be successful.

Finally, the importance of sustainment and the criticality of planning for sustainment is another key lesson we've learned out there. To sum it up, what we've learned from NTC is you must meet the standards in every facet of the operation, and everybody's important—from squad level all the way through brigade level.

*MILES (multiple integrated laser engagement system) has been a very critical training aid for the maneuver forces. Do you see CATIES (combined arms training integrated evaluation system which simulates indirect fire for maneuver and support forces and provides a real-time assessment of fire support) as an important addition?*

I think CATIES is a top priority. We need to fully develop it for realistic training of the force. I know General [Raphael J.] Hallada [Chief of Field Artillery] is extremely involved, and I'm confident we'll bring CATIES on line with his involvement. I'm a very, very strong supporter. I would say it is the one system we need at NTC to ensure everyone understands the criticality of fire support. CATIES, by the way, is not just an artillery

[training] system in my view. It is equally important for the maneuver forces.

**As we do our intelligence preparation of the battlefield, our leaders must be aware of the enemy's tremendous capabilities: the tubes of the Soviet artillery.**



**General Vuono discusses MLRS operations with 1LT Don O'Quinn, platoon leader of A Battery, 21st Field Artillery, 1st Cavalry Division Artillery.**

**...what we've learned from NTC is you must meet the standards in every facet of the operation, and everybody's important—from squad level all the way through brigade level.**

*As an overview, what are the most pressing doctrinal, hardware, training and organizational needs for the fire support community?*

Doctrinally, that the Field Artillery change its doctrine as the Army's maneuver-based doctrine changes. The artillery has to support that force and, as the force maneuvers, be innovative in using all the fire support assets available. You see, we have to plan doctrine for the new systems, too—ATACMS, the HIP [howitzer improvement program] howitzer and AFATDS [advanced Field Artillery tactical data system], as well as others. What the artillery has to do is develop a sound, unified doctrine for these systems before they're fielded.



**A leader must have a can-do attitude...be an agile forward-thinker...seize the initiative on the battlefield and retain it.**

Training poses the greatest challenge for the fire support community. How do you best train soldiers to integrate firepower at the right place and the right time on the battlefield? It's a significant responsibility for the fire support community. They must integrate this support at each command echelon.

**In the fast-paced battlefield environment, it's critical all elements of the combined arms team pull together as a team.**

Organizationally, I believe the eight-gun battery is a step in the right direction. It will give us greater capability to support maneuver by fire and enhance survivability.

Finally, in the leader development area, we must make sure fire support officers and NCOs understand the evolution in the fire support community. A fire support coordinator must handle maneuver fires, mortars, TACAIR, Naval gunfire and so forth. He has to know how engineers employ barriers and obstacles and cover those by fire. He has to have a clear picture of the intelligence systems and how they best work for him. He has to have a significant knowledge of maneuver operations—whether its heavy or light infantry, armor, cavalry, airborne or air assault. And he certainly has to

have an appreciation of support and sustainment. If he doesn't know these, it is very difficult for him to plan his fire support. He has to be an agile, forward-thinker so he's always one jump ahead of everybody. We say we must seize the initiative in the battle and retain it. You don't retain it if you're not forward-thinking.

*As a commander of Field Artillery units at all levels, both in combat and peacetime, what guidance would you offer young officers and NCOs?*

The guidance for the Field Artillery units at every echelon is the same guidance I would give any officers and noncommissioned officers. First, they must be technically and tactically competent. They must know their business. Second, we want leaders who are truly selfless in their dedication to the soldier and to their units. Third, we want leaders of the highest ethical standards. On the battlefield there is no room for anything but the most ethical behavior.

We want leaders who have a can-do attitude toward accomplishing the mission and who set the example 24 hours a day, seven days a week. They may not be at their appointed place of duty all that time, but they're examples. We need leaders who know and enforce standards. If they do that, then their soldiers are confident in themselves, each other and their leaders.

Above all, leaders must take care of

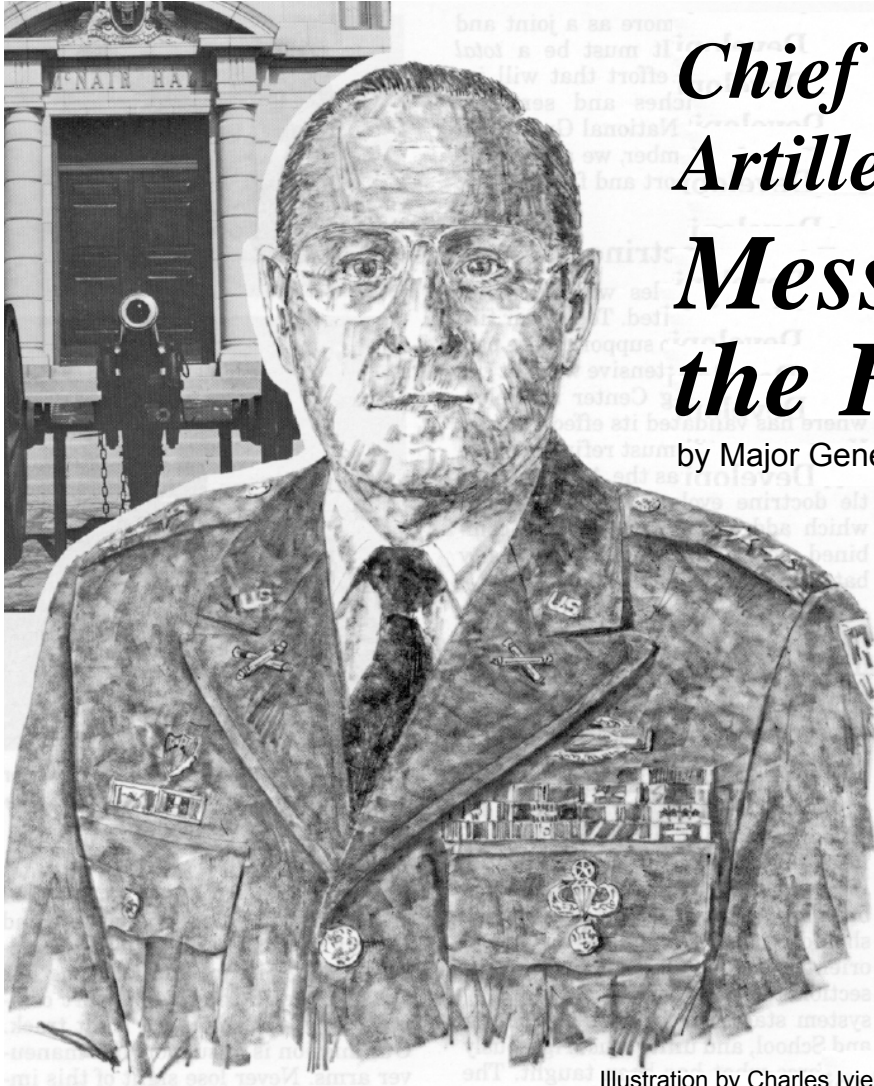
soldiers and their families—not just by words but by deeds. When properly led, soldiers will give more than we ever could have demanded.

*Do you have any final message to leave with Field Artillerymen worldwide?*

The Field Artillery has a distinguished tradition—one in which all artillerymen can take great pride. But Field Artillerymen today have an even greater challenge. They must meet it by understanding the doctrine—understanding how to fight and having engrained in them that preparing for war is their primary mission. They must be dedicated to tough, meaningful, challenging training done to standards with the combined arms team. They must develop themselves as leaders who are competent, selfless and dedicated. If Field Artillerymen do all that, then they are doing their job in providing for the common defense so we can secure the blessings of liberty for our country.



**General Carl E. Vuono succeeded General John A. Wickham as Chief of Staff of the Army on 23 June 1987. General Vuono, most recently Commander of the Training and Doctrine Command (TRADOC), Fort Monroe, Virginia, served as Deputy Chief of Staff for Operations and Plans, Washington, D.C., and Deputy Commanding General of TRADOC and Commanding General of the US Army Combined Arms Center and Fort Leavenworth, Fort Leavenworth, Kansas. He commanded the 8th Infantry Division (Mechanized), US Army Europe, and was Assistant Division Commander of the 1st Infantry Division, Fort Riley, Kansas. General Vuono commanded several Field Artillery units, including the 82d Airborne Division Artillery, Fort Bragg, North Carolina, and the 1st Battalion, 77th Artillery and later the 1st Battalion, 21st Artillery, 1st Cavalry Division, both in Vietnam. With 30 years of service, his many awards include the Distinguished Service Medal, the Legion of Merit, and the Bronze Star Medal with V Device and five Oak Leaf Clusters. General Vuono is married and has three children.**



# Chief of Field Artillery's Message to the Field

by Major General Raphael J. Hallada

Illustration by Charles Ivie

**A**s the Chief of Field Artillery, it's an honor and privilege to be your spokesman and represent you in military forums. I can think of no better job in the Army than being the Commandant of the Free World's finest School of Fire Support and Commander of Fort Sill. I will do my utmost to give our branch the leadership and direction it deserves, but I also need your help as we move into the future.

For years, Field Artillery has been called the King of Battle—and for good reason. In the past, we have been instrumental in determining the final outcome of countless battles. From Yorktown to Grenada, we have served our nation well. Esprit de corps, dedication and teamwork have been the hallmarks of our great branch. We have been the leaders of innovation and proudly have provided technically and tactically competent leaders up

and down the ranks for more than 200 years. Unquestionably, we are the heirs of a remarkable legacy of excellence, and with your help, I plan to build on it.

## Today's Fire Support

Today, the battlefield is changing dramatically. Our doctrine is specifically tailored to the maturing AirLand Battle doctrine. It is in place and viable. Our training is more realistic and more oriented toward actual combat. Our force structure and materiel meet the requirements of our global commitment. We can integrate and synchronize fire support better within the spectrum of fire support systems available. We also can see the battlefield better, monitor and control the progress of the battle more easily and strike with even more accuracy

and devastating lethality than we ever have in the past.

Our greatest and continuing challenge is the Threat. Let there be no doubt, "He" is not standing by idly, letting us get ahead. He's modernizing at a comparatively faster rate than we are. Furthermore, he is our qualitative equal in many areas, especially weapon systems. His training also is getting better. All over the world, the Threat is getting tougher. The Soviets have been at war perfecting their war-fighting skills for more than seven years in Afghanistan. Many third-world countries have improved their war-fighting skills tenfold in just the last decade.

Our Army leadership has told us the only way for the Army to be combat ready in the next war is by pitting our strengths against Threat weaknesses. One of our strengths is fire support.



**Our training is more realistic and more oriented toward actual combat.**

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**Our fighting chain  
is only as strong as  
its weakest link.**

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**A young trainee develops technical competence by adjusting live artillery rounds.**

Our AirLand Battle doctrine tells us that to be strategically effective against the enemy, we must provide the fire support necessary to fight and win at the operational and tactical levels of war. Our mission of providing the maneuver commander with deadly, responsive fire support remains unchanged, whether we are involved in low-, mid- or high-intensity conflict or assigned to an active or Reserve component, light, heavy, target acquisition, missile or rocket unit. It has always been that way, and it will continue to be so in the future. The maneuver commander must understand we are serious about providing him the best fire support, when and where he needs it. There must be no doubt in his mind we are dedicated to supporting the maneuver force.

### **Fire Support Imperatives**

We have several imperatives as fire support evolves to meet the demand. First, we must be able to mass fires across an extended battlefield, in all areas of the world and in all types of conflict. Second, we no longer can think of the battlefield just in terms of rear, close and deep operations. We may have no forward line of troops or linear separation of the battlefield as we have had in the past. Third, we need to

practice more as a joint and combined team. It must be a *total* Army effort—an effort that will include all branches and services, the Reserve and National Guard and our Allies. Remember, we are the experts of fire support and fire support coordination.

### **Evolving Doctrine**

Tomorrow's battles will be faster and more complicated. Today, our fire support doctrine to support these battles is working. Extensive work at the National Training Center and elsewhere has validated its effectiveness. However, we still must refine our fire support doctrine as the AirLand Battle doctrine evolves, especially that which addresses our joint and combined operations and low-intensity battle.

### **Training to Fight**

Today's soldiers are smarter than they ever have been. If they are challenged daily in training, they will more than accomplish the mission. Therefore, we must have a sound, demanding training program that fully integrates all aspects of our training. Individual and collective tasks must be taught precisely—to standards. We should strive for more performance-oriented and hands-on training from section to Army level. Our training system starts at the training center and School, and units must rigorously reinforce what has been taught. The School can't teach standards alone, and we can't expect it to.

### **Standardizing**

Good training must be keyed to our doctrine and evolve as it does. If we don't standardize our training, we will waste our soldiers' time by forcing them to learn or relearn their jobs as they switch units and leaders. Training time is precious today, and it will be even more so in the future. We should never let inefficient training occur.

### **Fighting as a Team**

Our war plans call for combined operations in Europe, Korea and elsewhere. If we are going to fight as a team, our training must focus on how each component operates. We have to train by conducting joint- and combined-scale operations as frequently as possible. National Training Center and the Joint Readiness Training Center deployments and exercises such as REFORGER and



**B Battery, 1-35th Field Artillery drives an M109A2 howitzer while a fire support vehicle (FSV) finds the range of a target.**

Crested Eagle train us to work better as a team and help us determine and correct weaknesses. By understanding the big picture and knowing our mission, we in the fire support community will keep on the right track. Our mission is to support our maneuver arms. Never lose sight of this important aspect.

### **Developing Competence**

Just as we must never lose sight of our mission, we must remember where our real strength lies—our quality soldiers. Our Chief of Staff, Sergeant Major of the Army and TRADOC Commander all say soldiers must know their jobs and the jobs of those working for and around them to perform their mission properly. Technically competent officers, noncommissioned and enlisted soldiers are the human element that allows us to put steel "on time, on target." General John Pershing once said, "Modern warfare demands of the Field Artilleryman a perfect technical knowledge of his weapon and a thorough understanding of its tactical employment." I fully support this belief.

Soldiers must know not only what they are doing but also why they are doing it. Our fighting chain is only as strong as its weakest link. A gunner who can't verify his sight picture and



take up displacement is ineffective. If his section chief can't verify that his gunner is doing the job properly, he is just as ineffective. The need for technical competence runs the whole rank gamut from private to general. We must continuously study our profession of arms.

Tactical competence also is rank immaterial. If technically smart soldiers of all ranks can apply their knowledge to different situations in an efficient, effective manner on the battlefield, then we'll fight well and win.

## Leading

Strong leadership is essential for any successful organization. In the Army, strong leadership must start at the lowest level. Today's Redlegs are intelligent and independent. Consequently, our leaders must realize that "blind faith" leadership won't work today or in the future. Leaders earn respect from their subordinates by having an intense devotion to duty, displaying technical and tactical expertise, listening and caring.

Leaders are made, not born. Therefore, developing leaders in the fire support community is another great challenge. We must continue to educate



The Field Artillery School performance-oriented and hands-on training help teach standards that units rigorously reinforce.

our soldiers to be flexible, innovative and to think on their feet, adapting to the demands of a highly fluid, stressful environment. We have to have a dynamic education system capable of growing future leaders.

## Attending to Detail

Outstanding units have several things in common. One is consistent, good performance, because they are thorough and practice the basics. It starts by doing the little things correctly and also by doing the correct things. From the smallest in-ranks inspection to the largest joint field exercise, attention to detail permeates everything they do. All of us need to become that way. Such attention helps units to avoid outcomes affected by "Murphy's Law." Just as in the past, leaders must be tough, fair and thorough. To repeat a phrase coined by one of our senior leaders—"You must do routine things routinely." These painstaking steps can mean the difference between winning and losing.

## Modernizing our Materiel and Units

Our American technology is the best in the world. So we need to exploit it by improving existing systems to attack with increased lethality. We must look and kill more deeply, reduce manpower requirements and improve our equipment and organization. We need a command and control system based on state-of-the-art data processing technology, which is also user friendly and interoperable with that of other services as well as the systems of our NATO partners. We need to develop a family of weapons to deliver fires in all areas of operations.

Additionally, we must embed training into the software of our command and control, target acquisition and weapon systems and use more combat training simulation. This will eliminate the need for separate devices and allow the soldier to train on the equipment he will use in war. We must improve our strategic and tactical deployability and mobility. These challenges are immense, I know, but achievable.


In the Field Artillery, we always have been innovative leaders. As we improve the reliability, availability, survivability and maintainability of our current and future systems with robotics, state-of-the-art propellants and artificial intelligence, we must have a balanced acquisition strategy. Because of limited resources, we will be constrained even

more in the future. Our modernization process must satisfy our future fire support imperatives and still be in concert with everything else we are doing.

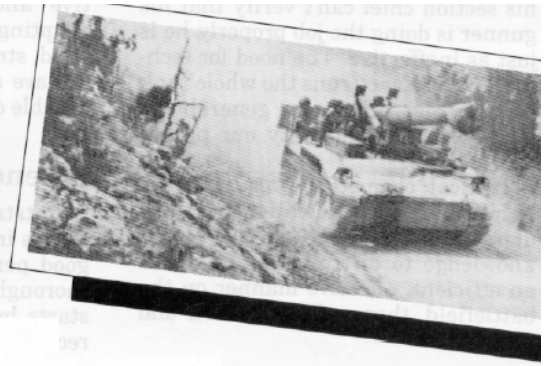
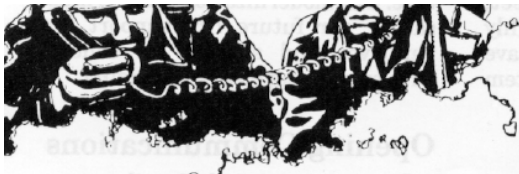
## Opening Communications

I want us to work together as a team. Each of you has special ideas and talents. I want to take advantage of them and know about your concerns. We must communicate and work freely with each other. Open communications are essential if we are to meet our goals and objectives. So be direct, candid and honest—stand up and be counted. I need your suggestions and support to fully develop our branch and best use the assets of the fire support community.

## Conclusion

As we have done in the past, so we must do in the future. We have hard work ahead, but I have the utmost confidence in you dedicated professionals now serving in our branch. We must build upon the excellence that always has marked artillerymen. Together we will succeed and master all challenges. 

**Major General Raphael J. Hallada assumed command of the US Army Field Artillery Center and School on 20 August 1987. In his previous tour of duty, he commanded the 82d Airborne Division and served as Assistant Division Commander for Support. In other Fort Bragg assignments, he commanded the 82d's Division Artillery and served as Assistant Fire Support Coordinator and Executive Officer of the Division Artillery. He also commanded the 2d Battalion, 321st Field Artillery, 82d Airborne Division. General Hallada was on the Army Staff, Washington, D.C., as Chief of Doctrine and Systems Integration Division, Requirements Directorate, and later Deputy Chief, Army International Rationalization Office, Office of the Deputy Chief of Staff for Operations and Plans. At Fort Leavenworth, Kansas, he was the Director of Command, Control, and Communications and Intelligence of the US Army Combined Arms Combat Developments Activity before coming to Fort Sill, Oklahoma, to be Assistant Commandant of the US Army Field Artillery School.**



# I Corps Artillery

I Corps Artillery, National Guard, Reserve and active units, is more than 30 percent of the artillery in the US Army. Located in Salt Lake City, Utah, and capstone aligned with I Corps at Fort Lewis, Washington, it has nine brigades in addition to the Corps Artillery headquarters battery.

I Corps Artillery supports two war plans. The war plan for Korea is our priority and calls for one active and five National Guard brigades. Our second war plan supports NATO and calls for one Army Reserve and five National Guard brigades.

During the year, I Corps Artillery participated in numerous exercises to train for our wartime mission. These exercises included Bold Adventure and Cascade Peak at Fort Lewis, Yama Sakura in Japan and Team Spirit in Korea.

To test our combat effectiveness during mobilization, movement to contact and battlefield fire support coordination, we will conduct FIREX-88 in June. We will conduct this live-fire, tactical exercise with units of I Corps and Corps Artillery at Dugway Proving Grounds and Camp W.G. Williams, Utah. The units will move in division sets to the locations, performing day and night operations and actual firing.

In January, Corps Artillery will host the sixth annual fire support conference. As in the past, all I Corps National Guard Field Artillery commands and numerous I Corps trace units will participate.

In July, we began receiving the tactical fire direction system (TACFIRE) followed by new equipment training. The training culminated in September with a 36-hour command post exercise that integrated TACFIRE in all aspects of I Corps Artillery operations.

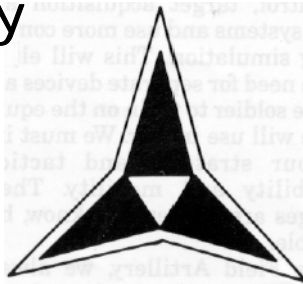
The I Corps Artillery is trained, equipped and motivated to put "steel on target"—on call.



# III Corps Artillery

III Corps Artillery's fast-paced efforts in 1987 focused on training, supporting and modernizing the force and participating in REFORGER 87. A brief review of some of these areas will illustrate our major actions in the past year.

The cannon battalions of III Corps Artillery participated in the National Training Center (NTC) rotations of III Corps (CORTRAIN) maneuver brigades. Corps Artillery soldiers gained invaluable experience in the reinforcing mission for the maneuver brigade's direct support battalion, conducting force-on-force

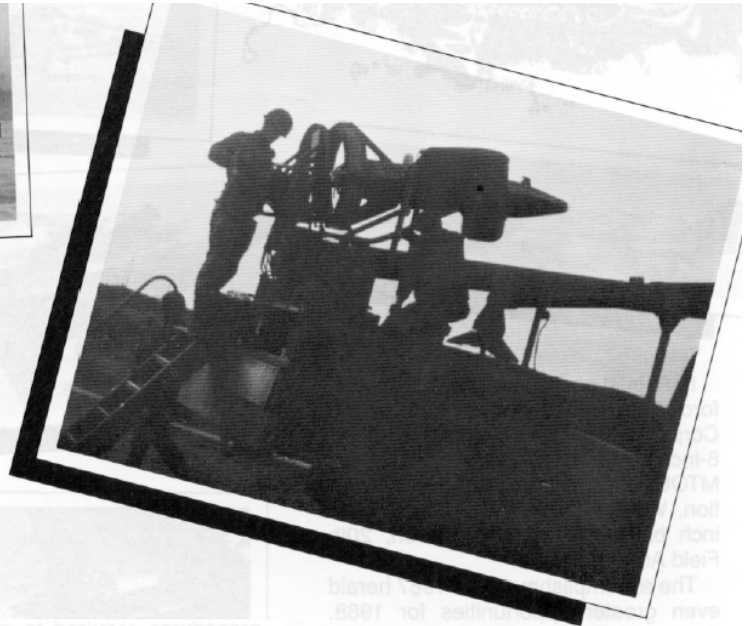


mission tasks and also performing some limited direct support mission responsibilities. The opportunity to train in a combined arms team under the most realistic conditions has been one of the most important training experiences for III Corps Artillery.

Back at Fort Sill, we continued to develop the new mobile armored artillery employment concept which is now an integral part of our training. Having a highly mobile, tracked artillery force moving closely behind attacking maneuver elements and performing a series of hipshoots as required is effective training for the uniquely offensive nature of III Corps operations.

III Corps Artillery evaluated 31 reserve component units the past year. We also supported Field Artillery School training and the Field Artillery Board testing. The support ranged from providing individual soldiers or pieces of equipment to complete battalions.

*Field Artillery*

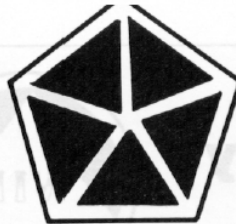


The first remotely piloted vehicle (RPV) battery in the Army came to III Corps Artillery in June 1987. D Battery (RPV) (Provisional), 2-2d Field Artillery, was formed from the group of soldiers who completed operational testing of the RPV at Fort Hood, Texas. The unit is now completing its follow-on RPV testing.

Offsetting the gain of the RPV unit was the deactivation of the headquarters company of the 100th Supply and Service Battalion, 214th Field Artillery Brigade. We also transferred the 14th Combat Aviation Battalion from Fort Sill to Fort Hood.

As the largest and most diverse corps artillery in the Army, the Phantom Corps Artillery remains committed to excellence and looks forward to greater achievements in 1988.

## V Corps Artillery

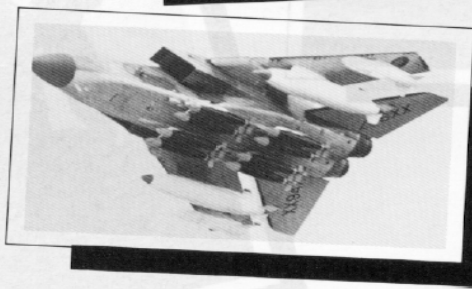
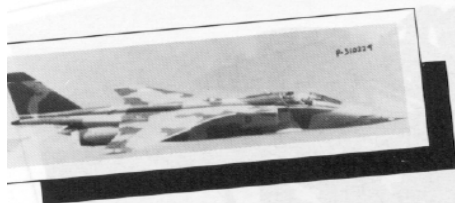
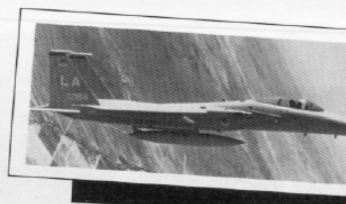


**A**lthough the V Corps Artillery mission has not changed, this year we saw several important organizational developments that significantly improved the fire support we provide the Corps.

In January, March, June and November, V Corps Artillery participated in echelons-above-corps (EAC) exercises and applied the finishing touches to our fire support module, a part of the V Corps dispersed command post. The March exercise also included the participation of French artillerists who were integrated into fire support operations officer positions. In each of the exercises, we continued to refine procedures for planning and requesting battlefield air interdiction targets from the Fourth Allied Tactical Air Force (4ATAF).

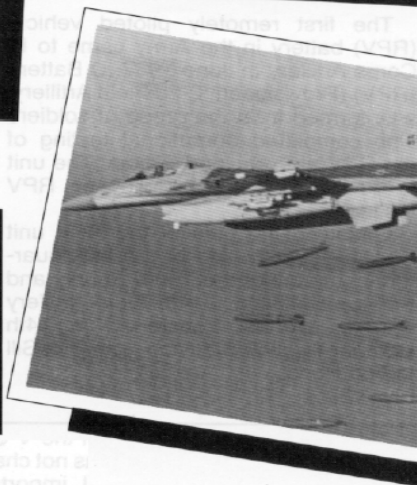
In the joint operations arena, V Corps Artillery made great strides in planning for joint electronic combat and developing techniques for Air Force electronic countermeasure (ECM) assets in support of ground operations. The techniques also minimize the adverse impact of Air Force ECM on Army command and control communications.

# Silhouettes of Steel



In August and September, the largest force structure changes in recent V Corps Artillery history occurred as two 8-inch battalions converted to "J" series MTOEs and upgunned to 3x6 configuration. We also activated a new 3x8, 8-inch battalion, the 2d Battalion, 20th Field Artillery.

The accomplishments of 1987 herald even greater opportunities for 1988. The V Corps Artillery cannon units will expand to 3x8 configuration, and joint exercises with the Air Force will increase as we continue to develop the procedures required to make the AirLand Battle effective in V Corps.



## VII Corps Artillery



The focus is clear to the soldiers of VII Corps Artillery: train to your mission essential task list (METL) and stress section, individual, leader and combined arms training. The goal is to have combat units do the important things well and use training time more efficiently.

In addition to our training focus, other key programs are force modernization, doctrine improvement and war-fighting. Over the past year, we reorganized five of the nine cannon battalions and upgunned them as Army of Excellence (AOE) 3x8 battalions. In the next 18 months, the remaining four battalions also will upgun.

The challenges of command and control, Field Artillery survey, survivability, tactics and combat service support are a few of the issues VII Corps Artillery has been working on during the past year. Our goal has been to employ artillery as effectively as we can in the Central Region.

As our cannon units convert to 3x8, VII Corps Artillery is looking ahead to the 3x4 Lance compression and Army tactical missile system (ATACMS) fielding. Stationing studies are in progress to support these programs.

In addition, the staff of the Corps Artillery has been developing an issue paper on "how to fight," the VII Corps of the Future. Our goal is work with Fort Sill to help provide employment doctrine to unit commanders before the new missile organizations and systems arrive.

Doctrine development and survivability are closely tied. To be successful, we must survive the first Soviet artillery attack. The VII Corps units have developed a technique that allows corps artillery units to occupy protected positions at the beginning of a Soviet artillery prep. Some of these positions also help the counterfire attack by corps artillery. Following the prep, corps artillery units occupy their general defense plan (GDP) positions and join the counterfire battle with all available fire support.

The reinforced Field Artillery brigade is the logical headquarters for counter-fire. The range and lethality of the 8-inch



system and multiple launch rocket system (MLRS) make them ideal for engaging enemy artillery. With the Field Artillery brigades fighting the counterfire battle, division artillery and the force artillery headquarters can concentrate on fighting the close-in battle. The Q36 radars within VII Corps link digitally within the reinforcing battalions while the Q37

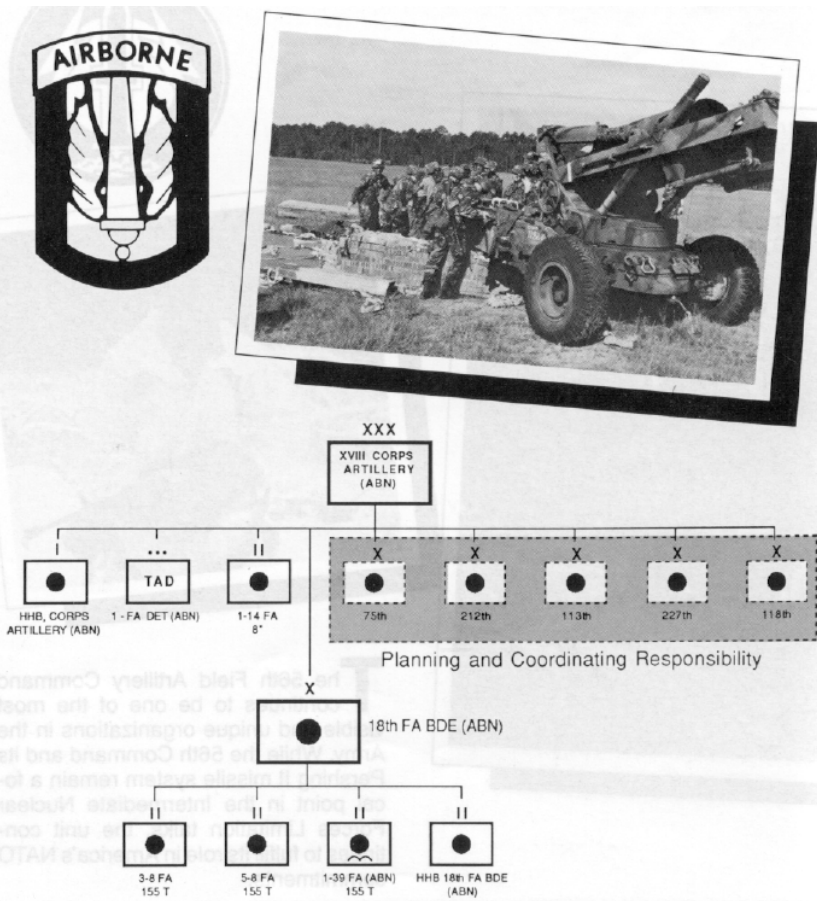
communicates directly with the Field Artillery brigade tactical fire direction system (TACFIRE).

The VII Corps Artillery is proud of the results of its efforts during 1987 and is looking forward to an even more successful and challenging year in 1988. The future of the Field Artillery is happening in the VII Corps Artillery today.

## XVIII Airborne Corps Artillery

The XVIII Airborne Corps Artillery supports the Army's contingency corps. As a result, the Corps Artillery must be able to deploy its personnel and equipment to support an airborne, air assault, mountain (light) or mechanized division or combination of any of these. Inherent in this mission is proficiency in airborne operations for both personnel and heavy equipment, air assault and airmobile techniques and low altitude parachute extraction (LAPES) procedures.

In March 1987, the headquarters battery, XVIII Airborne Corps Artillery was activated. This headquarters battery provides the command and control for multiple Field Artillery brigade deployments critical to a contingency corps. An active brigade component of the XVIII Airborne Corps Artillery is the 18th Field Artillery Brigade (Airborne). The 18th Brigade consists of three M198 artillery battalions at Fort Bragg. The reorganization of the 1st Battalion, 39th Field Artillery, 18th Brigade, as the Army's only 155-mm airborne artillery battalion





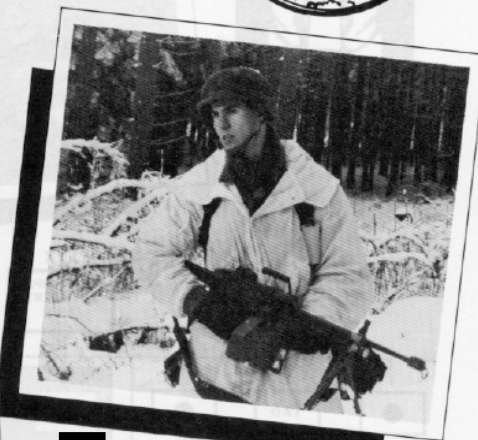
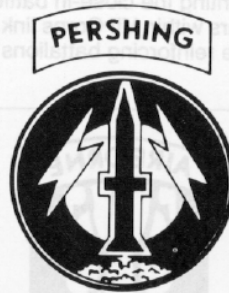
# Silhouettes of Steel



provides the "Fire of the Dragon" for any contingency with any deployment means available. Another unique organization in the XVIII Airborne Corps Artillery is the 1st Field Artillery Detachment, the only corps-level target acquisition detachment in the Army.

In March 1988, the 3d Battalion, 27th Field Artillery (MLRS) will activate. With the current and future changes in the XVIII Airborne Corps Artillery, we can support the Corps with the firepower and responsive deployment for it to accomplish its vital mission.

## 56th Field Artillery Command



**T**he 56th Field Artillery Command continues to be one of the most visible and unique organizations in the Army. While the 56th Command and its Pershing II missile system remain a focal point in the Intermediate Nuclear Forces Limitation talks, the unit continues to fulfill its role in America's NATO commitments.

The 56th's peacetime mission is to add credibility to the NATO deterrence of aggression by being combat ready at all times. Pershing II, with its incredible accuracy and extended range, ensures an enemy will pay a high price for aggression.

If deterrence fails, the Command can contribute nuclear, deep-targeting capabilities to the NATO defense of Europe. During wartime, the Command provides general support nuclear fires to the theater commander.

To provide that support, the 56th trains to survive and operate under the most difficult conditions. One recent training event is the tactical evaluation program (TAC EVAL), a NATO-administered test to see if we have the skills to survive and provide nuclear fire support and have the logistical capability to sustain operations. TAC EVAL, conducted every 18 months, challenges the Pershing task force to the maximum.

The accuracy, reliability, and power of the Pershing II system make it an important deterrent, but the professionalism of the Command's soldiers is what makes the system work. The quality and skill of Pershing soldiers have never been higher. They proved their skill in live-firing exercises at Cape Canaveral, Florida, where 21 missiles were successfully launched by United States Army Europe (USAREUR)-based soldiers.

Our soldiers and our firepower truly make the 56th Command the Peacemakers.

# The United States Army Field Artillery School

**T**he Field Artillery School has had a great year! The driving force behind everything we do at the School is to improve the entire spectrum of fire support for you and the maneuver branches.

The development of fire support doctrine is one of our exciting areas. Your feedback dictated that we revise the FM 6-20 series manuals. We have done so, and the series captures all aspects of combined arms fire support.

Our working relationship in integrating doctrine with that of our sister branches has never been better. That's why you see up-to-date fire support sections in their manuals. A great new manual will hit the field in the third quarter of 1988—TC 6-71, *The Fire Support Handbook for the Maneuver Commander*. It will tell the maneuver commanders how to get the most from their fire support officers.

The National Training Center continues to provide great information on improving fire support training and doctrine. Effective in October, the Joint Readiness Training Center for light forces joined the NTC as a prime training area.

Throughout our courses for officers and non-commissioned officers, we emphasize developing soldiers and leaders with a warrior spirit. To provide units with a more technically proficient lieutenant, the officers basic course is being



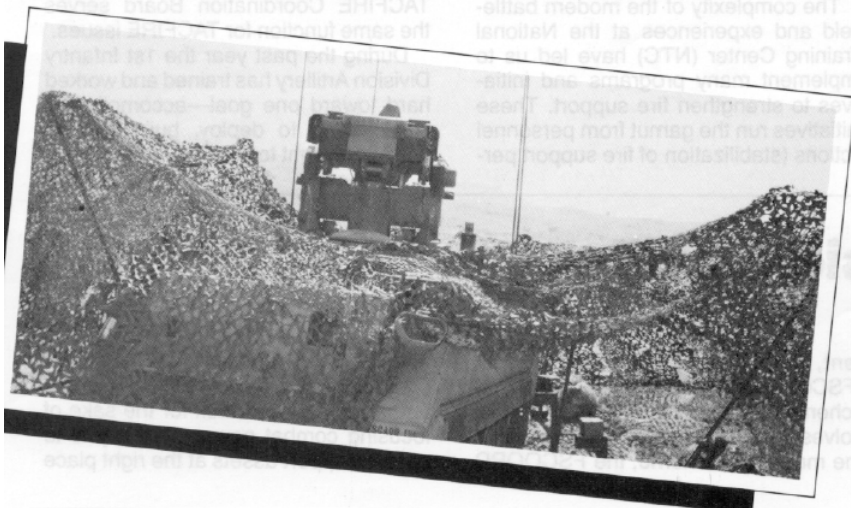
organized into two phases: instruction on fundamental Field Artillery knowledge and in-depth technical instruction and performance-oriented training on specific artillery systems depending on the Lieutenant's first assignment. The officer advanced course trains the captain to be a battery commander and a fire support officer at the brigade and battalion task force levels.

Fort Sill has a newly-organized noncommissioned officer (NCO) academy that trains both basic and advanced NCO courses as well as the drill sergeant course. The focus of our NCO academy training is technical and tactical competence and leadership skills in a live-in environment.

The School's newest course is the aerial fire support officer training course, which began in 1987 with instruction at both Forts Sill and Rucker. It is providing well-trained fire support officers to operate in the OH58D helicopters.

Our goal is to develop competent, confident officer, warrant officer and noncommissioned officer leaders who understand and can exploit the AirLand Battle doctrine. Remember, the Field Artillery School is your School: give us your questions and we'll get an answer to you. Our job is to support you the best way we can. Good shooting!

## 1st Armored Division Artillery



**T**he 1st Armored Division Artillery has two major objectives. The first is to improve the technical fire control skills necessary to provide timely and accurate fires for the combined arms team. The second is to exercise these skills in stressful training designed to test the synchronization of the scheme of maneuver and the scheme of fire support.

The Div Arty achieved both objectives when it executed the fire support portion of the Division's version of the National Training Center (NTC) task force Army training and evaluation programs (ARTEPS)—exercise Ironstar—at Hohenfels Training Area (HTA). In November 1986, the Div Arty fielded a large fire-marker force and a Field Artillery battalion evaluation team at



# Silhouettes of Steel

them for using fires poorly. We also determined specific failures in the fire support system as a basis for future training programs.

Techniques and lessons learned during the force-on-force, general defense plan battle include:

- Changing the force artillery's counterfire command and control procedures because of clearance of fires requirements for the exercise.
- Developing fire planning techniques to handle the heavy information management demands of the task force fight.
- Firing 25,000 primers to simulate

full service rounds (with Department of the Army approval).

- Simulating logistical ammunition requirements by allowing no more primers per truck than the number of rounds each can carry.

Additionally, to refine gunnery skills we executed the artillery gunnery exercise (AGE) by using the technology of the laser and computer to instantly tell fire units how accurate their rounds were in each fire mission.

Our balance between gunnery and fire support and our innovative operational and gunnery procedures continue to define the training rhythm of the 1st Armored Div Arty in the year ahead.

the HTA. The design of the Div Arty team closely followed NTC concepts with modifications to fit the European situation.

The intent was to mark indirect fires well enough to convince maneuver leaders of the importance of indirect fires on the battlefield, reward them for using indirect fires well and penalize

## 1st Infantry Division (Mechanized) Artillery



**T**raining within the 1st Infantry Division (Mechanized) Artillery is dynamic and innovative. The 1st Infantry Division's return of forces to Germany (REFORGER) mission requires the Division Artillery be prepared to deploy quickly, build combat power and fight.

The complexity of the modern battlefield and experiences at the National Training Center (NTC) have led us to implement many programs and initiatives to strengthen fire support. These initiatives run the gamut from personnel actions (stabilization of fire support personnel

for at least 12 months) to converting the training set fire observation (TSFO) to a company-level simulation center. The latter allows a maneuver company commander and his fire support team (FIST) chief to plan and fight a battle using an NTC or general defense plan (GDP) scenario and slides. To ensure the Division's maneuver forces receive the best advice from the Division's artillerymen, we started a FIST fire support officer certification program.

We also formed a Fire Support Committee and Conference, and the tactical fire direction system (TACFIRE) Coordination Board. The Committee addressed the battlefield location of the direct support (DS) battalion commander, standardization of fire support planning, and the supplying of assets not provided by current MTOEs such as an M113 for the direct support battalion commander. The Conference provides a forum for the Division Artillery to resolve internal fire support issues. The TACFIRE Coordination Board serves the same function for TACFIRE issues.

During the past year the 1st Infantry Division Artillery has trained and worked hard toward one goal—accomplishing our mission to deploy, build combat power and fight to win.

## 1st Cavalry Division Artillery

**M**assed fire support at the point of decision is the objective of mobile armored artillery. As the maneuver commander establishes the maneuver scheme and communicates his intent, the

fire support coordinator (FSCoord) finalizes the "fire support scheme of maneuver." The program involves more than mere acceptance of the maneuver scheme; the FSCoord must be in

"sync" with the maneuver commander's intent, must assess risk and accept prudent risk for the sake of focusing combat power. The key is to put fire support assets at the right place

*Field Artillery*



at the right time—the purpose of a scheme of maneuver. We are maneuvering fires, not cannons.

The 1st Cavalry Division Artillery, RED TEAM, orients its training on this philosophy. Our offensive orientation ties events to intent in a fire support scheme of maneuver to keep up with our more mobile maneuver counterparts. The direct support (DS) artillery follows close behind the lead elements of a maneuver brigade until they reach the time of decision. The maneuver brigade and DS artillery move under an "umbrella" of reinforcing fires. The hipshoot is a way of life as lead task forces encounter "show-stopping" enemy forces. Similarly, direct fire proficiency is a must as firing platoons encounter bypassed Threat units. The intent is survival rather than using cannons as direct-fire tank killers.

By using these techniques, we have had some success in local training and at the National Training Center (NTC). During NTC train-up, we practice mobile operations, integration of fire support and synchronization of fire and maneuver. We use force-on-force training techniques

with a fire-marker system similar to the NTC "Star Wars" concept, and we conduct formal evaluations of fire support effectiveness. These evaluations are phase one of our two-phased Army training and evaluation program (ARTEP) with the second phase the standardized external evaluation (SEE). Taken together, they identify training shortfalls and hone skills necessary to conduct mobile armored artillery operations—RED TEAM!



## 2d Armored Division Artillery

The 2d Armored Division Artillery (Hell's Fires), part of the most modernized heavy division in the force, continued to develop tactical concepts and field new equipment during 1987. This year Div Arty capitalized on two National Training Center (NTC) rotations and REFORGER 87 in its quest for realistic training.

During the NTC rotations, the Div Arty deployed the first MLRS that participated in both force-on-force and live-fire exercises. It was also the first time at the NTC a brigade was supported with the full complement of fire support assets, including general support artillery, attack helicopters and close air support (CAS).

With a 3×8 certification ARTEP-based qualification test (ABQT) under its belt, the 3d Battalion, 3d Field Artillery ("Top Gunners"), deployed to Germany along with other units to support the Division on exercise "Certain Strike," REFORGER 87.

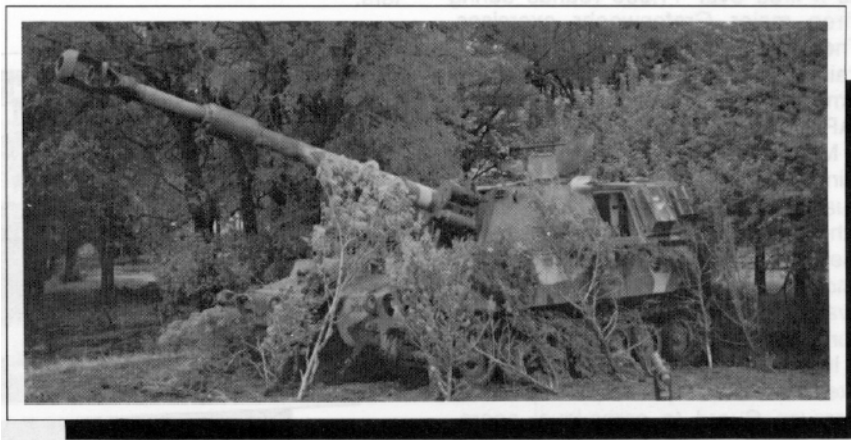
The first six OH58D helicopters in the active force joined Hell's Fires in March and certified with a combined

arms ABQT in May. They fought as an integral part of III Corps during REFORGER 87.

Since April, both direct support battalions have completed 3×8 conversions and are preparing for fire support vehicle, ground vehicular laser locator designator and Copperhead fieldings, which begin in early fiscal year 88. The Div Arty is scheduled to support remotely piloted vehicle (RPV) testing

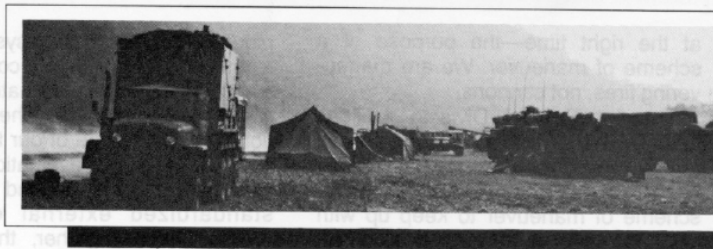
and combined arms in a nuclear environment—CANE IIB—(testing survival in an intense nuclear, biological and chemical environment) in 1988.

Today, fully equipped with the most modern equipment and manned with highly skilled, well-trained soldiers, Hell's Fires stands ready to continue to provide massive fire power to the Division. "Victors then, ready now!"





# Silhouettes of Steel



## 2d Infantry Division Artillery



**T**hroughout 1987, 2d Infantry Division Artillery trained to deploy on short notice and fight in defense of the Republic of Korea (ROK). Our mission is to provide quality fire support to the Division and, when required, reinforce the artillery of our ROK allies. The following highlight some of our initiatives to accomplish this challenging mission.

Battalions conduct 16 hours of tactical fire direction system (TACFIRE) training each week, integrating all fire support elements from forward observers through the Div Arty TACFIRE. Communications, always a challenge with Div Arty elements located on six different compounds, requires combinations of landline, FM radio and commercial telephone lines.

To evaluate and focus training efforts, we developed a TACFIRE command post exercise (CPX) and a fire support CPX and conduct them quarterly. The CPXs are driven by war-plans-based scenarios.

Future CPXs will include Firefinder radars, a Lance battery, and forward observers in the training simulator.

Our unique mission in Korea, coupled with mountainous terrain and widely dispersed mobility corridors, demands innovative task organizations and missions. We formed a strike force centered around each direct support battalion. The 155-mm howitzer battalion, with its organic combat observation laser teams (COLT), a Firefinder radar and one multiple launch rocket system (MLRS) platoon, is equipped and organized to provide responsive "high tech" artillery fires such as Copperhead, Field Artillery scatterable mines (FASCAM) and MLRS.

The 2d Infantry Div Arty is not only one of the Army's largest but also one of the most effective Field Artillery organizations. Our training is progressive and our plans innovative to provide the best possible fire support on a moment's notice.

## 3d Armored Division Artillery

**T**he 3d Armored Division Artillery has maintained the fast pace of the "Spearhead" Division throughout 1987 as it fired over 11,000 rounds during three major Grafenwoehr exercises. These included a full-scale Div Arty field training exercise (FTX) as well as an Army training and evaluation program (ARTEP).

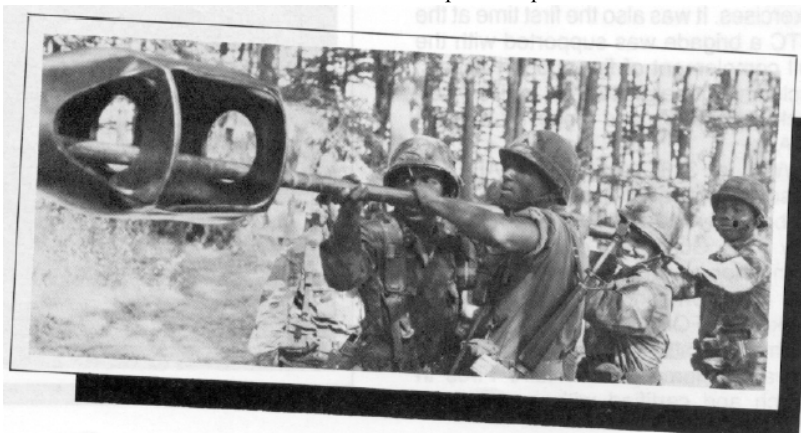
March saw the Div Arty conducting joint air attack team (JAAT) training and dual training evaluations of 2d Battalion, 6th Field Artillery and 1st Battalion, 40th Field Artillery. For the first time, all direct and general support battalions were evaluated in the general defense position roles of mutual support.

In addition to its major artillery training exercises, Div Arty also participated in Caravan Guard (a corps-level operations and logistics exercise) and two

Spearhead Express FTXs at Hohenfels training area. In the second of these, support of training tasked the Div Arty to its full extent by splitting operations between two training areas 70 kilometers apart.

Despite major training exercises throughout 1987, the Spearhead Div Arty managed the fielding of the Field Artillery ammunition support vehicle, the M16A2 rifle and six OH58D helicopters.

A milestone for the Div Arty will be the 3 x 8 conversion of its direct support battalions, beginning in January and continuing through June 1988. The Div Arty will refine its artillery skills during three more exercises as it prepares for its role in REFORGER '88. With all this training, Div Arty will continue on the move as it proudly supports the Spearhead Division with its awesome fire power. Spearhead steel!

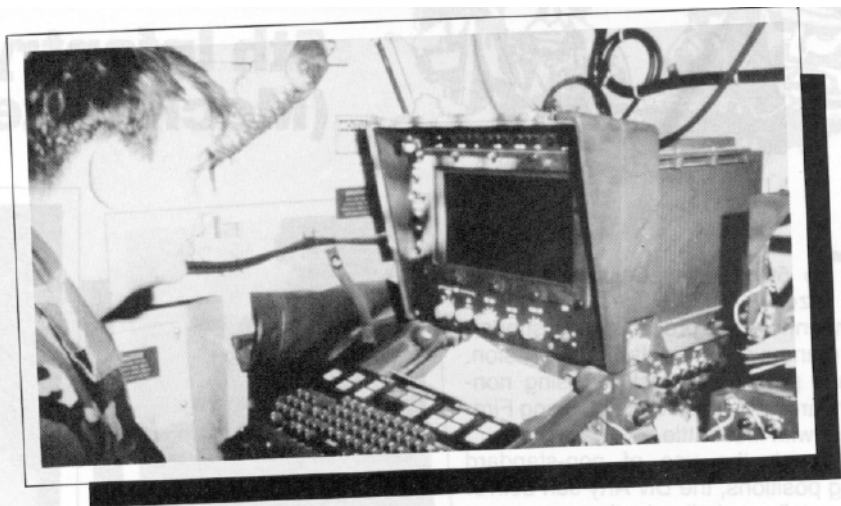


## 3d Infantry Division Artillery

**T**he 3d Infantry Division Artillery continues, as it has since June 1985, to focus on finding better ways to stretch and train with the tactical fire direction (TACFIRE) system, while placing a premium on individual and section training and testing. In fact, at our last major training exercise at Grafenwoehr, we tested 240 sections.

The 3d Div Arty also has continued to develop a very aggressive maneuver rights area (MRA) training program. The high point of this training has been the administration of several battalion-sized Army training and evaluation programs (ARTEP) in the maneuver rights area, two multiple launch rocket system (MLRS) battery-level ARTEPs along with several major field training and command post exercises. We have trained with the go-to-war mission in mind.

Elements of the Div Arty, to include fire support teams and fire support officer



sections, are always present when any of the Division's maneuver elements train at the company or higher levels. Because of our combined efforts, the maneuver and fire support relationship is as good as it ever has been.

The Div Arty intends another major maneuver rights area ARTEP in November. This will take the 1st Battalion, 10th Field Artillery into a general defense area, where it will rapidly maneuver

for about seven days, including a rail movement to Grafenwoehr and subsequent live-fire exercise. At the same time, the Div Arty will be "ARTEPing" its MLRS, A Battery, 76th FA (Rockets of the Marne). Six of our newly-activated OH58D helicopter sections will be included. This ARTEP may be the most demanding yet realistic training exercise the Div Arty has undertaken in many years.

## 4th Infantry Division (Mechanized) Artillery

**T**he mission of the 4th Infantry Division (Mechanized) Artillery is to provide fire support to the Division's maneuver forces and does so with a level of success few can equal. Why? In a word, training. The training experiences available to this Div Arty's units are truly unique. We conduct demanding, challenging training to hone our soldiers' skills as artillerymen at the training areas at Fort Carson, Colorado, and at the Pinon Canyon Maneuver Site (PCMS).

In those areas we practice intensive combined arms training on a continual basis. The PCMS is a training area of approximately 244,000 acres of rough, semi-desert which is ideally suited for preparing 4th Division units for rotation to the National Training Center at Fort Irwin, California. PCMS is 150 miles southeast of Fort Carson; thus, each unit training at this site conducts major deployment and redeployment of its forces and equipment. No simulation here!

Additionally, all 4th Div Arty battalions undergo a standardized external evaluation (SEE) that we developed not only to evaluate the performance of the artillery, but also to integrate maneuver forces and their staffs. Using a maneuver scenario to stress and test our ability to provide supporting fires, the SEE is successful in providing the training vehicle necessary to accomplish synchronization of maneuver and fire. Artillerymen and maneuver forces evaluate true combined arms training in a demanding environment.

Our training continually demands the best from 4th Division Artillerymen. Our consistent record of strong performance at the NTC tells the whole story—we are prepared and "Death is on Call."



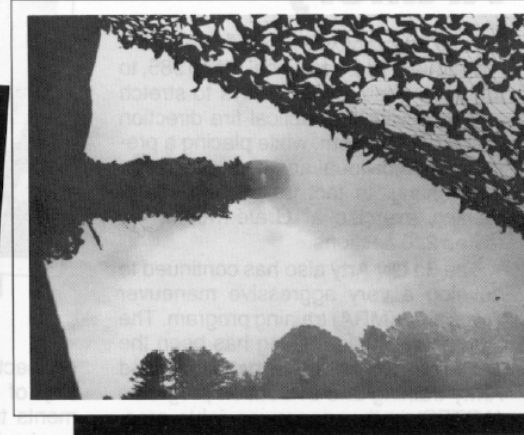


# Silhouettes of Steel

## 5th Infantry Division (Mechanized) Artillery

The 5th Infantry Division (Mechanized) Artillery has developed some innovative procedures to support the maneuver elements of the Division. These procedures include using non-standard firing positions and using Firefinder with first battle.

Through the use of non-standard firing positions, the Div Arty can deliver indirect fires similar to those encountered in combat. The direct support battalion coordinates with the maneuver brigade who manages the terrain to clear a 1500-2000 meter "goose egg" for a battery to occupy. The battery commander then reconnoiters the area and determines the positioning of his battery based on the mission, enemy terrain troops available-time (METT-T) and using the position and azimuth determining system (PADS). Gunners compute safety independently at a minimum of two locations: the battery and battalion fire direction centers (FDC). Once the safety data has been verified, the battalion FDC notifies the Div Arty tactical operation center (TOC). Non-standard firing positions allow units to become accustomed to the "real world" problem of terrain management and the "on-the-ground" coordination practices combat will require.



The 5th Div Arty devised a system to use the digital capabilities of the Firefinder radars and the Div Arty and battalion tactical fire direction system (TACFIRE) shelters to generate actual enemy artillery locations on a battle board using the first battle simulation. This has allowed division units to train against opposing forces in a simulated environment with a realistic scenario. Using the radars' professional training program test and queing schedules and priority and critical friendly zones, the radars can locate targets. A printout is made of the target data base and then used at the battle simulation center

(BSC) to determine initial locations of the opposing forces artillery on the battle board. An FM radio link is established at the BSC with a variable format message entry device (VFMED) to monitor and verify target data sent digitally to the Div Arty counterfire cell by the radars. This allows considerable realism to challenge the leaders being trained during a command post exercise.

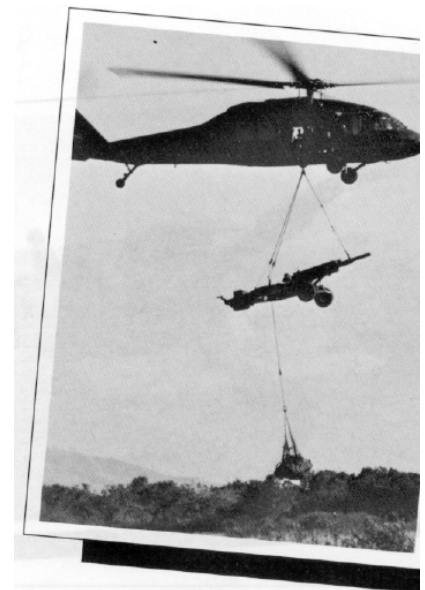
These and other initiatives have enhanced realistic training throughout the 5th Infantry Div Arty, ensuring the soldier can fight and win.

## 7th Infantry Division (Light) Artillery

The 7th Infantry Division (Light) Artillery is the Army's first Div Arty fully organized under the light infantry division (LID) concept. As a member of the Army's rapid deployment force, the 7th Division Artillery must be able to deploy on short notice anywhere in the world to fight and win. The Div Arty consists of three direct support 105-mm (M102) battalions, a 155-mm (M198) general support battery and Division Artillery headquarters. Also at Fort Ord and attached to Div Arty is an I Corps Artillery general support M198 battalion.

Air operations are a critical capability of the Div Arty. We emphasize both day and night moves and raids via the UH60 Blackhawk helicopter. Unit leaders must become proficient quickly in pickup and landing zone operations for either firing battery airmobile movements or logistical aerial resupply.

The 7th Div Arty is involved in many new equipment initiatives. We are testing the digital control terminal (DCT) and the fire support team digital message device (FIST DMD) for light forces. We also are receiving the ground vehicular



*Field Artillery*

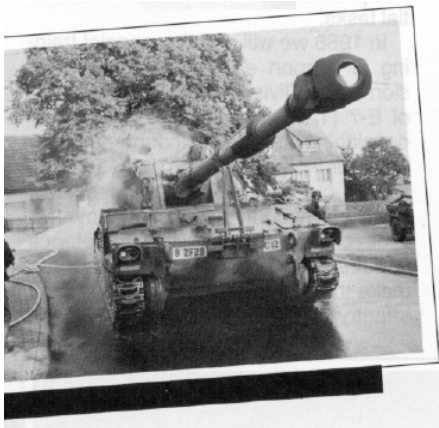
laser locator designator (G/VLLD) and Copperhead systems.

The 7th Div Arty has had several deployments, including Team Spirit in Korea, Bold Venture at Fort Lewis and with the multinational force observers (MFO) in the Siani. In January the Division Artillery will participate in the first Light Infantry Division Joint Readiness Training rotation by sending a direct support battery and the battalion tactical operations center (TOC) to Fort Chaffee, Arkansas.

The 7th Div Arty will continue to meet the rapid deployment challenges as the first light infantry division artillery.



## 8th Infantry Division (Mechanized) Artillery



For the 8th Division Artillery, last year was an exciting time of training realism. We maximized the awesome potential of our new 3x8 configuration and enhanced our combat capability with the addition of the fire support vehicle (FSV), the advanced helicopter improvement program (AHIP) OH58D and aerial fire support officers. We also integrated our training program with our general defense plan (GDP) mission.

The central focus of the Pathfinder Power training effort was our war plans. We shifted our training from exclusive reliance on the Grafenwoehr and Baumholder major training areas (MTAs) to extensive use of the German countryside. In 12 battalion-sized operations

in the maneuver rights area during fiscal year 87, our leaders came to grips with the reconnaissance selection and occupation process as well as techniques for occupation of urban terrain.

Our emphasis on maneuver also has driven us to revise our standardized external evaluation (SEE) format. Our new SEE relies on continuous combat operations in both the German countryside and on the MTA and has been extended beyond the traditional 72 hours to up to six days.

We, the 8th Div Arty, will use the training base we established as the foundation to continue to build our skills in executing our GDP and in enhancing our support to the maneuver arms.

## 9th Infantry Division (Motorized) Artillery

Controlling much of the firepower of the Army's only motorized division, the 9th Infantry Division Artillery faces a unique challenge. Armed largely with the M198 towed howitzer, the artillery's least agile weapon, the Div Arty must furnish responsive fires to the Army's most agile maneuver units throughout a division zone of unprecedented size.

Despite advanced technological systems, the Div Arty faces a serious imbalance between its fire support requirements and its organic capabilities. Efforts to develop a High Mobility Cannon System may eventually solve this "motorized dilemma."

Accordingly, we are examining both new and old operational practices. To improve the synchronization of fire support with maneuver and capitalize on the small signature and mobility of the high-mobility, multi-purpose wheeled vehicle (HMMWV) mounted tactical fire direction (TACFIRE) system, we are experimenting with placing the direct support (DS) battalion in the supported





# Silhouettes of Steel

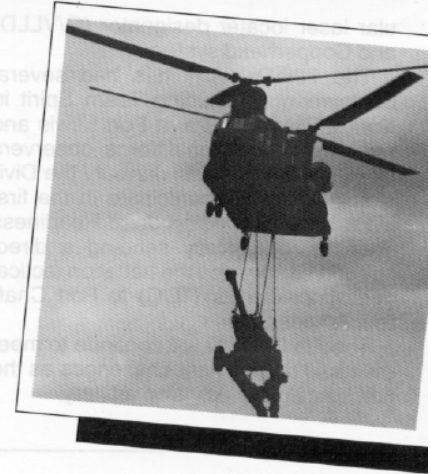
brigade tactical operations center. The direct interface between the brigade fire support officer and DS battalion fire direction officer should greatly increase the battalion's responsiveness.

Concurrently, we are attempting to compensate for the inherent mobility limitations of the M198 by positioning batteries on spreads that will enable them to survive enemy counterfire without moving. In the attack, we are practicing "accompanying artillery" methods in which

artillery hipshoots from the march into roadside positions pre-surveyed by heliborne position and azimuth determining systems (PADS).

Finally, both to minimize occupation and displacement time and to facilitate rapid response to out-of-traverse fire missions, we are experimenting with self-erecting camouflage attached permanently to the howitzer and with alternative methods of personnel and equipment protection.

While these efforts don't fully resolve the "motorized dilemma," they will help it considerably and improve 9th Div Arty's readiness for war.



## 10th Mountain Division (Light Infantry) Artillery

**A**mid the roar of cannons, US Army leaders reactivated the 10th Mountain Division Artillery at Fort Drum, New York, on 2 May 1987—30 years after its deactivation at Fort Riley, Kansas. It consists of two direct support 105-mm towed battalions (1st and 2d Battalions of the 7th Field Artillery); an eight-gun, general support 155-mm towed battery which will be activated in September 1988 (Battery E, 7th Field

Artillery); and the 1st Battalion, 156th Field Artillery of the New York National Guard that rounds out the unit.

Given the dual mission of manning a new Div Arty while providing two immediately deployable, combat-ready Field Artillery battalions, our focus has been on training. Training begins with the individual skills taught in the Division's Light Fighters Course and continues with a technical certification program for junior

leaders. The program culminates in tough, combined arms training at unit level that ensures our soldiers can accomplish the Div Arty's mission essential tasks.

In 1988 we will develop special training to support each contingency mission of the Division. With the activation of E-7 (TAB), we will take the lead in developing an artillery counterfire program for the light division.

With our goal of combat readiness, the Div Arty continues to be innovative in developing the technical competence and fire support concepts necessary to make the 10th Mountain Division (Light Infantry) a winner on the battlefield.



## 24th Infantry Division (Mechanized) Artillery

**A**nother challenging training cycle for the 24th Infantry Division (Mechanized) Artillery was accomplished in 1987. This year Div Arty units deployed around the world providing fire support to the Victory Division. While finding new ways to do it better, our efforts centered on the following initiatives:

- Upgrading the fire support personnel structure by assigning experienced

majors as brigade fire support officers (FSOs) and advanced course graduates or former battalion commanders as maneuver battalion FSOs. We are filling company FSO positions with our most experienced and capable lieutenants.

- Integrating a separate multiple launch rocket system (MLRS) battery into the Div Arty firepower picture. We are firing multiple rockets from widely dispersed platoons as a part of Div Arty

*Field Artillery*

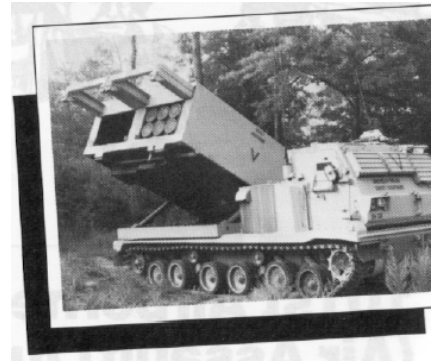
mass missions and times-on-target in our weekly tactical fire direction system (TACFIRE) sustainment exercises. These exercises, capstoned with a quarterly command post exercise, also incorporate Firefinder and the fire support team (FIST) in a total fire support training program.

- Integrating combined arms training between maneuver units, artillery, close air, air defense and attack helicopters in

our quarterly Quick Victory joint air attack team (JAAT) exercises.

- Creating the direct support battalions' voice fire support coordination net between the FIST and FSOs. A second voice communications net for the FSOs and the battalion fire direction center cleared the airways for digital messages.

The Div Arty is supporting the 24th Infantry Division to accomplish its mission and be "First to Fight."



## 25th Infantry Division Artillery

**T**he last year has been busy for the 25th Infantry Division Artillery with our battalions or batteries deployed to almost all of its major contingency areas: Korea, Japan, Australia and Thailand. The Div Arty's mission in the Pacific remains dynamic and demanding as we must maintain our ability to deploy and fight in low-, mid- or high-intensity conflict.

The Div Arty completed its transition to the light configuration with the activation of F Battery, 7th Field Artillery in November. This gives us 80 howitzers: 54 105-mm and 26 155-mm.

One of the Div Arty's most successful initiatives was the construction of a high mobility multipurpose wheeled vehicle (HMMWV) shelter that is Air Force-certified

for air transport. Our soldiers designed it, and the Army tested it at Aberdeen Proving Grounds.

The Div Arty also finished a combined arms sub-caliber range which exercises, in a defensive scenario, the command and control and the fire planning and execution ability of a platoon or company fire support team and its infantry leadership using the 14.5, the mortar trainer and live-fires from 155-mm howitzers. It has been an excellent teaching tool.

During August, the entire Div Arty deployed to the island of Hawaii for a live-fire exercise. It was the first time since the late 1960s that the Div Arty's four battalions have massed fires. It was an outstanding success, firing more than 800 missions, executing more than 35 air assaults and completing a battalion external evaluation.

The 25th Division Artillery, one of the most frequently deployed artillery organizations in the Army, continues to prepare for our challenging mission.



## 82d Airborne Division Artillery

**T**he 82d Airborne Division Artillery's mission is to deploy anywhere in the world within 18 hours and conduct an airborne assault, fight and win. Knowing our soldiers could be in combat tomorrow requires hard training to maintain a constant state of high combat readiness.

The 1st, 2d and 3d Battalions of the 319th Airborne Field Artillery Regiment conduct frequent parachute operations, dropping not only paratroopers, but also M102 howitzers, prime movers, fire direction

centers and command and control vehicles. Although the Army training and evaluation program (ARTEP) standard for a daylight drop zone mission is 15 minutes, our batteries routinely accomplish it in less than 10 minutes from the time the last jumper exits the aircraft until the first round is downrange.

The 82d's fire support elements, fire support teams (FIST) and combat observation lasing teams (COLT) invest significant time and resources in integrated fire support training. That includes calling for, adjusting and coordinating all indirect fires, close air support (including AC 130 gunships), naval gunfire and attack helicopters.

Direct support batteries conduct frequent live-fire exercises (LFXs) with the infantry battalions, thus establishing the



# Silhouettes of Steel

teamwork and confidence necessary in combat. "Train like you're gonna fight" has real meaning at Fort Bragg.

The 82d Div Arty recently reorganized under the Army of Excellence (AOE) design. We are learning to accomplish our unchanged mission with fewer soldiers and different equipment. Howitzer sections

have two less cannoneers, and battery fire direction centers have expanded to enhance split battery operations.

The 82d Div Arty troopers are motivated and highly trained. They proudly carry on the traditions of the 319th Airborne Field Artillery Regiment.

## 101st Airborne Division (Air Assault) Artillery

**S**upport of XVIII Airborne Corps and 101st Airborne Division (Air Assault) contingency plans requires rapid deployment to the far corners of the globe. Training for these contingency plans has included deployments from Fort Campbell, Kentucky; to Honduras; Panama; Virginia; Arkansas; New York and the National Training Center (NTC). During Solid Shield 87, Division Artillery soldiers combined with more than 50,000 other US military personnel in the US Commander in Chief's, Atlantic Forces, largest exercise. Fire support team (FIST) personnel deployed to Honduras, conducted fire support planning for the 101st Division task force and integrated fires of F Battery, 2-10 Marine Artillery after it was air lifted 50 miles from the beachhead. During exercise Caballero Volant, portions of a battalion deployed by C130 aircraft, followed by a 75-mile air assault to the forward operating base at Fort Chaffee, Arkansas. This exercise also included a FIST link-up and passage of lines with 1st Battalion (Ranger), 75th Infantry Ranger Battalion personnel.

A direct support battalion (-) deployed with organic equipment to West Point, New York, and provided six weeks of fast-paced training for more than 1,200 eager cadets. The training was part of the division task force's assigned annual mission of training United States Military Academy cadets.

Golden Eagle, a division field training exercise, provided countless challenging opportunities for air assault operations in a simulated combat environment. Operations spanned more than 200 miles throughout Tennessee and Kentucky. The scenario severely tested our communications during extended nuclear, biological and chemical operations and battalion-sized air assaults of 80 miles.

Future deployments to enhance our worldwide training include sending a direct support battalion (-) to NTC in January and a general support battalion to Fort McCoy, Wisconsin, for cold-weather training in February.

Division Artillery supported the ongoing development of air assault doctrine by helping to produce a training film to

illustrate air assault artillery raid tactics and techniques.

Our training and initiatives keep the 101st Div Arty—the air assault artillery—deployable worldwide.



## Amphibious Artillerymen: The US Marines



### Mission and Organization

**A**s stipulated by the National Security Act of 1947, the US Marine Corps is a naval force. The Corps has 201,000 Marines, including more than 20,000 officer and 181,000 enlisted Leathernecks. More than 7,000 are Redleg Leathernecks, including 1,300 officers and 5,800 enlisted personnel.

Because the Marine Corps must be capable of conducting amphibious operations, each division is essentially a light infantry division augmented to sustain an extended campaign. In other words, Marine forces are light enough to get there and heavy enough to stay.

The US Marine Corps is a unique service. One facet that sets it apart from other military organizations is that Marines are a compact combined arms team. For each Marine division there is a matching Marine air wing comprised of jet fighters; jet attack aircraft; vertical,





short-takeoff and landing attack aircraft; light, medium and heavy helicopters as well as transportation aircraft; antiaircraft units; and an air command and control system.

Because of its unique organization and mission, Marine artillery operations must be as flexible as possible. Marine direct support battalions are 3x8 organizations and have towed, 155-mm howitzers. The use of towed howitzers allows the Marines to land by a variety of surface craft but retains the option of airlift, using the heavy helicopter.

Marine direct support batteries are part of each amphibious ready group, usually found at sea in amphibious ships in a high state of alert. These groups frequently sail in the Mediterranean Sea and the Western Pacific or Indian Ocean.

Marine divisions have two general support battalions: one towed and one self-propelled. The towed battalion follows the 3x6 configuration and has 155-mm howitzers, while the self-propelled battalion has three, six-gun M109 batteries and two, six-gun M110 batteries. This organization allows Marines to use the full spectrum of national ammunition assets. It also gives them the ability to form a self-propelled, direct support organization if the commander combines



the division's tank and armored amphibians into an armored, brigade-sized task force.

One obvious difference between Marine and Army artillery is that Marines don't have rocket artillery. They get their deep fire capability from the attack aircraft of the Marine air wing. In fact, a Marine air-ground team has more combat power than any other like-sized unit.

The Marines' weapons inventory is unique in other ways. Each artillery regiment (a five-battalion organization that the approximate equivalent of the division artillery) has 24 M101A1 105-mm howitzers. These are extra weapons used to arm task forces as needed. To be effective, of course, each direct support battery must train and qualify with this weapon annually. The Marines also have a few batteries with M114A1 howitzers, soon to be replaced by M190s.

## Fire Support Coordination Elements

While there are many other minor differences between the USMC artillerymen and the Army's Redlegs, a major difference is the way the Marines organize observation and fire coordination assets. The Marines don't have fire support teams (FIST). Each direct support battery has three organic forward observer (FO) teams headed by a lieutenant and an artillery liaison officer.

In the field, the FO teams go to an infantry company, which also has an infantry mortar observation team and possibly a forward air controller and a Naval gunfire spotter. All of these fire control teams work under the supervision of the infantry battalion fire support coordination center that controls fire from any asset. The fire coordinator at the infantry company level is the infantry company commander.

In the infantry battalion, the fire support coordinator is the weapons company commander, usually a very senior infantry captain. The air liaison officer (a Marine pilot), the Naval gunfire liaison officer (a Navy surface warfare officer) and the artillery liaison officer all assist the fire support coordinator.

In the infantry regiment (Army brigade), the fire support coordinator is the artillery liaison officer (an artillery major), and he gets assistance from the air liaison officer (a pilot major) and Naval gunfire liaison officer (a Navy lieutenant commander).

At division level, Marines have an organization similar to that of the regimental level, only with more experienced people. The artillery commanders at all levels are personally responsible for fire support coordination.



## Training

Marine officers were among the first students at the Army's School of Fire—now called the US Army Field Artillery School (USAFAS)—at Fort Sill. Currently, all Marine artillerymen, officer and enlisted, receive their entry-level artillery training at USAFAS. Marines also return for advanced officer training and NCO courses, for a total of about 2,600 students annually. The Marine Corps very deliberately decided to train at Fort Sill to ensure the maximum possible commonality in technical aspects of artillery support is maintained by the two services. As learned in World War II, Korea and Vietnam, it is essential that all artillery fires be integrated.

## Conclusion

Today Marine Field Artillerymen stand ready to accept the challenges of the future. They remember that the US Army and US Marine artillerymen share strong common technical bonds as well as those bonds forged from fire and smoke that bind all Field Artillerymen.

# American Artillery and the Medal of Honor

by Major David T. Zabecki

The Medal of Honor is the supreme award this nation bestows on its armed forces for gallantry and intrepidity in combat above and beyond the call of duty. The deed performed must have been one of personal bravery or self sacrifice so extraordinary and conspicuous as to distinguish the individual above his comrades and must have involved risk of life. Only the President of the United States can award a Medal of Honor.

The Medal of Honor is the highest decoration awarded for combat heroism to a member of the United States armed forces. Since its inception in 1861, 3,394 servicemen have received it. Nineteen of them have received the Medal of Honor twice.

One hundred and fifty-four Field Artillerymen have won Medals of

Honor since the Civil War. Through our history, the deeds remain similar with only the names of the heroes, units and wars changing. Under the most adverse combat conditions, the artillery heroes did whatever was necessary to accomplish their missions. At the same time, they protected their comrades at all costs, including with their lives. In short, their stories

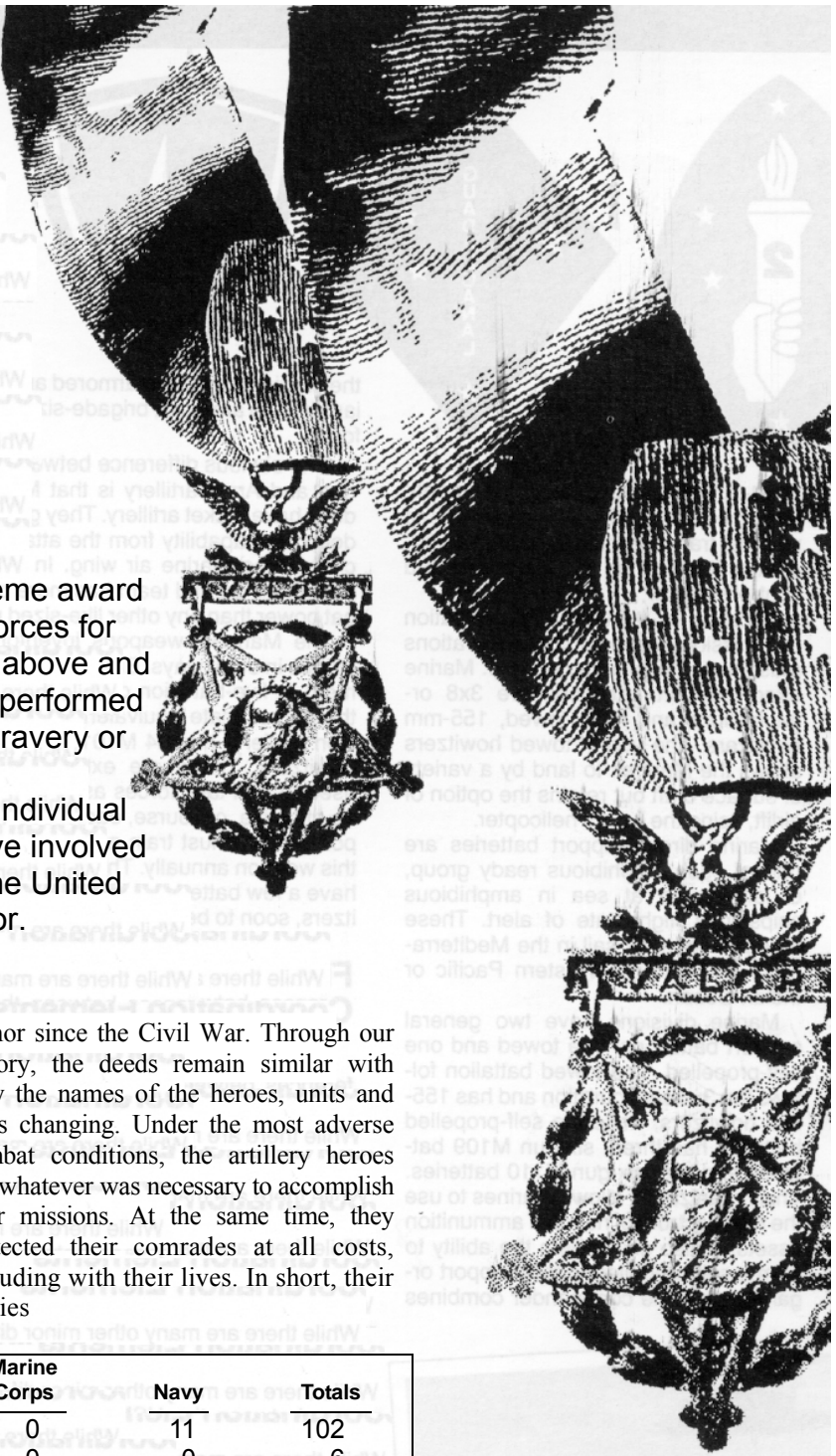
	Army	Marine Corps	Navy	Totals
Civil War	91	0	11	102
Indian Wars	6	0	0	6
Philippine Insurrection	6	0	0	6
Vera Cruz	0	0	2	2
World War I	2	0	0	2
World War II	9	4	0	13
Korea	7	3	0	10
Vietnam	9	3	1	13
<b>Totals</b>	<b>130</b>	<b>10</b>	<b>14</b>	<b>154</b>

Artillery Medal of Honor Winners by War

teach us about the warrior spirit and unit cohesion at their best—the goals of today's Army.

## The Origins of the Medal of Honor

The Medal of Honor was not the idea of any one man or group. However,



in early 1861, Colonel Edward D. Townsend (2d Artillery), who was then serving as the Adjutant General of the Army, started actively lobbying within the War Department for the creation of the first American military decoration. The US Navy picked up on the idea and got a Navy Medal of Honor approved by Congress as early as 21 July 1861. Because of resistance from the Commanding General of the Army, Lieutenant General Winfield Scott (ironically another artilleryman), the Army Medal of Honor wasn't approved until 12 July 1862. Authorization for the award, however, was retroactive to the start of the Civil War.



Fort Sill Museum Archives

## What is an Artilleryman?

Before I can discuss the artillerymen who have won Medals of Honor, I first must define the term artilleryman. This is not as easy as it sounds. Previous lists of the Artillery's Medal of Honor winners have been based solely on the individual's unit as listed in the citation. Thus, we counted

Private, Seaman, Landsman, Coxswain	38
Private First Class, Ordinary Seaman	10
Musician, Bugler	3
Corporal, Specialist 4, Technician 5	18
Sergeant, Petty Officer 2d Class	27
Staff Sergeant	1
Sergeant First Class, Platoon Sergeant, Technical Sergeant	2
First Sergeant, Master Sergeant	3
2d Lieutenant	9
1st Lieutenant, Navy Lieutenant (jg)	23
Captain, Navy Lieutenant	10
Major	4
Lieutenant Colonel	2
Colonel	2
Brigadier General	3
<b>Total</b>	<b>154</b>

### Artillery Medal of Honor Winners by Rank

many cooks, buglers and truck drivers simply because they were in artillery units. And, we overlooked many artillerymen who were not in artillery units at the time of their heroic actions. In those traditional counts, we also overlooked non-artillerymen who won the Medal of Honor while fighting as artillerymen, regardless of their unit.

For the purpose of this discussion, I'll use a broad definition: an artilleryman is anyone who—

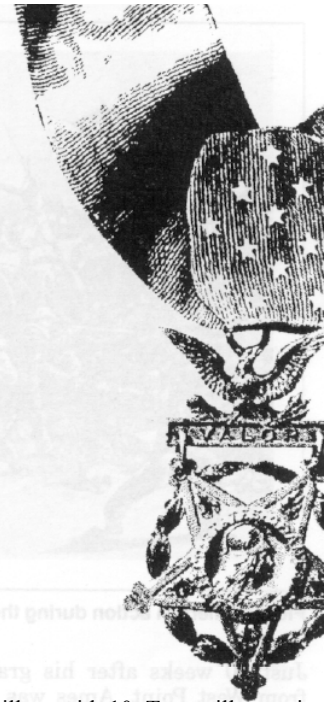
- Is assigned to an artillery unit, regardless of his MOS.
- Is an artilleryman by basic branch or primary MOS, regardless of where he is serving.
- Is a former artilleryman to the extent the major portion of his career has been in the Artillery.
- Is a non-artilleryman who wins the Medal of Honor while fighting as an artilleryman or performing traditional artillery tasks. The only restriction is the artillery must be land based (field, coastal and air defense).

## Facts and Figures

Using my definition, 154 artillerymen have won Medals of Honor in eight different wars in the last 126 years. At least 80 were reservists, volunteers or national guardsmen, and 37 were foreign born.

One hundred and two were enlisted men or noncommissioned officers at the time they won Medals of Honor, although several of these later became officers. Eighteen of the officers (a remarkable 35 percent) eventually became general officers.

The artillery unit that claims the most Medal of Honor winners is the 2d

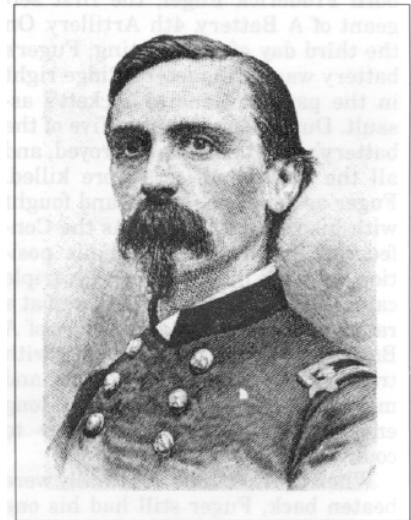


Field Artillery with 10. Ten artillery units have had three or more Medal of Honor winners, and they account for one-third of the total.

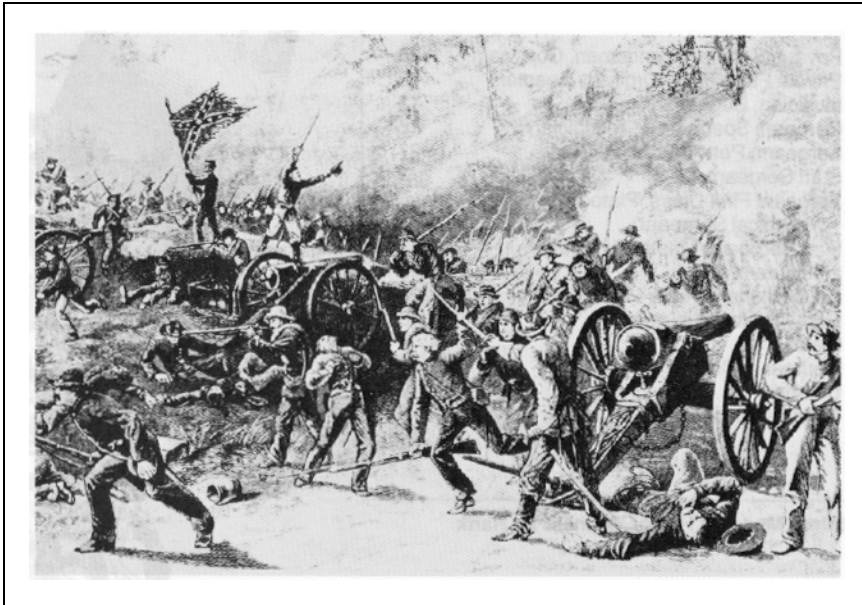
As interesting as the statistics may be, we must remember they represent flesh and blood soldiers whose basic mission was no different than that of today's soldiers. In the following sections, I'll review the history of a few of these 154 heroes and show how history repeats itself.

## The Civil War

The first artilleryman to win the Medal of Honor was Second Lieutenant Adelbert Ames on 21 July 1861.



Second Lieutenant Adelbert Ames



**Field Artillery in action during the Civil War.**

Just 10 weeks after his graduation from West Point, Ames was in command of a platoon of guns of the 5th Artillery at the First Battle of Bull Run. Ames was severely wounded but refused evacuation and continued to direct firing operations. Eventually his men had to prop him up against a caisson when he became weak from loss of blood, but he still retained command. Ames received a total of six brevet promotions during the war and finished the war as the commander of Xth Corps. After the Civil War, he was the Military Governor of and later a US Senator from Mississippi.

The Battle of Gettysburg was not only the turning point of the Civil War, but it was also the greatest artillery action of the war. Five American Redlegs won Medals of Honor during that fight. Among them was German born Frederick Fuger, the first sergeant of A Battery, 4th Artillery. On the third day of the fighting, Fuger's battery was on Cemetery Ridge right in the path of General Pickett's assault. During the fighting, five of the battery's six guns were destroyed, and all the battery officers were killed. Fuger assumed command and fought with his remaining gun. As the Confederate infantry stormed his position, he fired his last gun with triple canister. The last round was fired at a range of 10 yards. The survivors of A Battery then engaged the enemy with trail spikes and rammer staffs and managed to hold them at bay long enough for the Union infantry to counterattack.

When the Confederates finally were beaten back, Fuger still had his one gun ready for action. The Union Chief of

Artillery, Major General Henry Hunt, gave him an immediate battlefield commission. Fuger was breveted twice more during the war and retired from the Army as a colonel in 1900.

A characteristic of the Civil War was the relative youth of many of its heroes. Bugler John Cook, 4th Artillery, was only 15 years old when he became the youngest of the Artillery Medal of Honor winners. He won it as a voluntary member of a gun crew during a fierce artillery duel at Antietam, in 1863.

Another young artillery hero was Captain William D. Dickey, Commander of M Battery, 15th New York Heavy Artillery. At Petersburg in 1864, he was seriously wounded by enemy artillery fire but refused evacuation and remained in command. The

2d Field Artillery	10
1st Rhode Island Artillery	9*
4th Field Artillery	7
1st Illinois Light Artillery	6**
1st Field Artillery	6
5th Field Artillery	5
1st Missouri Light Artillery	4
34th New York Battery	4
4th New York Heavy Artillery	3
11th Marines	3
	<hr/>
	<b>57</b>

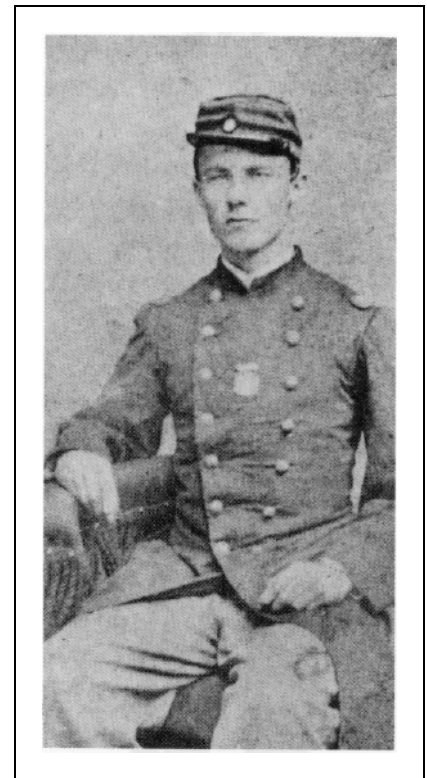
\* 7 for the same action

\*\* all 6 for the same action

**Artillery Units with Three or More Medals of Honor**

following day, although weak from loss of blood, he led his battery in a successful infantry-style assault on the Confederate positions. Captain Dickey was 19 years old at the time. By the age of 20, he was a colonel and commanded a brigade at the battle of Weldon Railroad.

Another characteristic of the Civil War was the award of the Medal of Honor for group actions. At Vicksburg in 1863, Captain Patrick H. White, with five of his men from the Chicago Mercantile Battery, 1st Illinois Light Artillery, manhandled a howitzer up to a gun port in the enemy fortifications and opened fire. A private from the 77th Illinois Infantry also helped them. All seven received Medals of Honor.



**Captain William D. Dickey**

Some of the Artillery's most notable Civil War heroes won Medals of Honor while serving in other than artillery units, hence, they're often overlooked. Absalom Baird (1st Artillery), Alexander Webb (2d Artillery), and Rufus Saxton (4th Artillery) were all serving as brigadier generals in various non-artillery US Volunteer units when they won their Medals of Honor. They're the highest ranking Redlegs to win the award.

Ironically, the man who is probably the most prominent of all the Artillery's Medal of Honor winners also

**Field Artillery**

falls into this often overlooked category. In 1861 at Wilson's Creek, John M. Schofield won the Medal of Honor while he was simultaneously a major in the 1st Missouri Volunteer Infantry and a captain in the 1st Artillery. Schofield was a major commander during the Civil War and, while still on active duty, served as Secretary of War during the impeachment of President Andrew Johnson. Schofield was later the Superintendent of West Point and rose to the rank of lieutenant general. From 1888 to 1895, he was the second-to-the-last Commanding General of the US Army, a position abolished when the Office of the Chief of Staff was created.

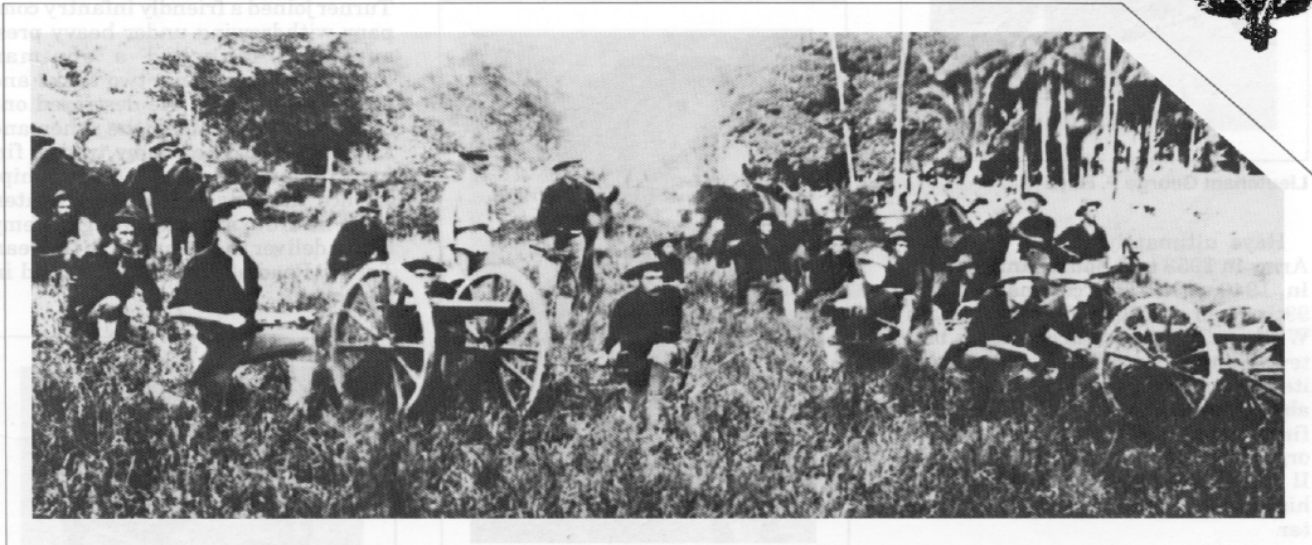
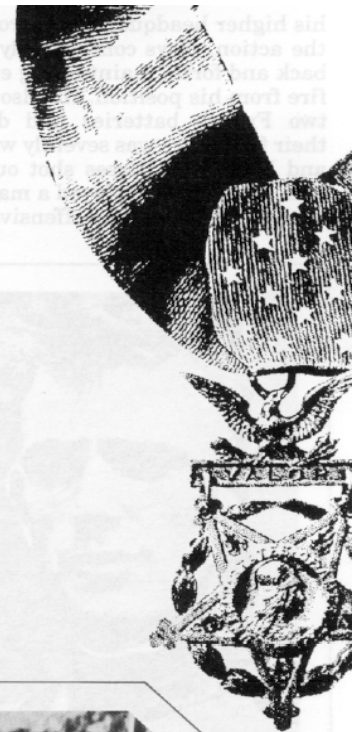
## The Philippine Insurrection

Artillerymen were also among the Medal of Honor winners during the Philippine Insurrection, but their

awards came for fighting in infantry actions. For example, William E. Birkhimer, 3d Artillery, was assigned to Staff Judge Advocate duties for most of his tour in the Philippines. During one of his few trips to a forward area, he took charge of a detachment of 12 men and routed an enemy force of 300. Birkhimer was 51 years old at the time, making him the oldest of the Artillery's Medal of Honor winners.

In 1899, when he won the Medal of Honor, he was only a captain (not uncommon in those days). One year later, however, he was a colonel in command of an infantry regiment in the Philippines. He retired as a brigadier general in 1906.

Birkhimer was also the first historian of the American Artillery. His 1884 book, *Historical Sketch of the Artillery of the United States Army*, is still the standard reference on American Artillery from the Revolution to the post-Civil War period.



A detachment of 1.65-inch guns of the 6th Artillery against the Philippine Insurrectionists on Iloilo, Philippine Islands, in 1899.



"The World War (I) demonstrated the importance of Field Artillery," General John J. Pershing.

## World War I

World War I saw the first large-scale use of indirect fire and the corresponding rise in the role of the forward observer (FO).

Lieutenant George P. Hays, 10th Field Artillery, won the Medal of Honor during a massive two-day barrage by German artillery in July 1918. When his position's commo equipment was destroyed right at the outset, he immediately set off on horseback to re-establish contact with

his higher headquarters. Throughout the action, Hays continuously moved back and forth, maintaining effective fire from his position. He also rallied two French batteries and directed their fire. Hays was severely wounded and had seven horses shot out from under him, but he played a major role in checking a German offensive.



**Lieutenant George P. Hays**

Hays ultimately retired from the Army in 1953 as a lieutenant general. In 1940, when he commanded the 99th Field Artillery (Pack), Captain William O. Darby was one of his battery commanders. Darby later credited Hays with teaching him much about the aggressive use of indirect fire assets. Darby, of course, was the organizer and leader of the World War II Darby's Rangers and was noted for his innovative use of the 4.2 inch mortar.

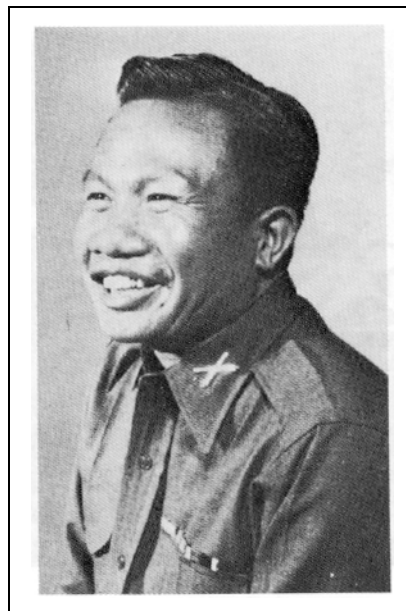
## World War II

Sergeant Jose Calugas, a mess sergeant in the 88th Field Artillery, became the first Filipino to win the Medal of Honor. During the fighting on Bataan Peninsula, enemy shelling had neutralized the crew of another battery's gun. Calugas ran more than 1,000 yards through incoming rounds and took command of the position. He organized a volunteer crew of other non-cannoneers (including field grade officers) and put the gun back in action.

When Bataan finally fell, Calugas was captured. He survived the infamous Bataan Death March and received



**Camouflaged gun positions during World War II.**



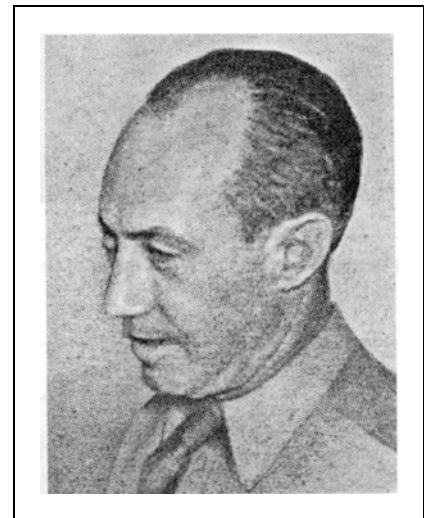
**Sergeant Jose Calugas**

a direct commission in the Field Artillery, retiring as a captain in 1957.

Artillerymen were among the youngest and the oldest of the Medal of Honor winners of World War II. On Okinawa, 19-year-old Private First Class Harold Gonslaves, 15th Marines, was killed when he smothered a grenade that landed in the middle of his FO team. In France, 46-year-old Private First Class George B. Turner, 499th Field Artillery, found himself cut off from his unit during a German armored attack in January 1945.

Turner joined a friendly infantry company withdrawing under heavy pressure and launched a one-man counterattack against two tanks and 75 enemy infantry. He destroyed one of the tanks, disabled the other and killed many of the enemy troops, firing a light machine gun from the hip.

Once the attack had been beaten back, he drove a truck through enemy fire to deliver the wounded to the rear. Turner Road at Fort Sill is named in his honor.



**Private First Class George B. Turner**

## Korea

Captain Lewis L. Millett is probably the Artillery's most colorful Medal of Honor winner of the post-World War II

period. In 1950, he was an FO with the 8th Field Artillery in Korea when he requested a transfer to the Infantry. He was assigned the command of Company E, 17th Infantry, whose previous commander, Captain Reginald B. Desiderio, had just been posthumously awarded the Medal of Honor. It was a tough act to follow, especially for a transplanted Redleg. But Millett had his own ideas.

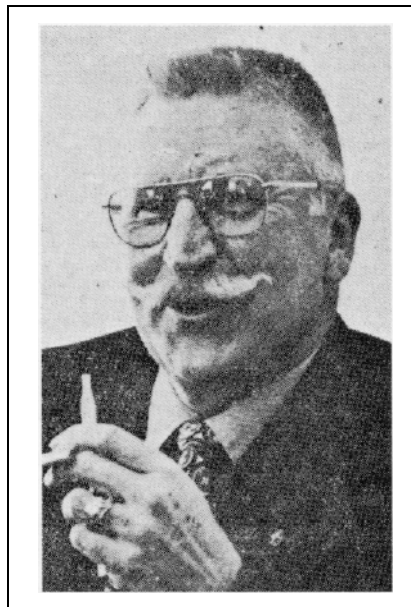
Millett got a re-issue of bayonets for his company and started running it through basic bayonet drill. At first, Company E went along to humor its eccentric new commander. But in the end, it payed off. On 7 February 1951 near Saom-ni, Millett led two platoons in a bayonet assault on a hill held by more than 200 North Koreans and Chinese. The platoons killed 47, wounded 60 and routed the rest. Millett was wounded by grenade fragments but refused medical treatment and retained command.

The great military historian Brigadier General S.L.A. Marshall called it "the most complete bayonet charge by American troops since Cold Harbor" (Civil War). Marshall personally wrote Millett's citation.

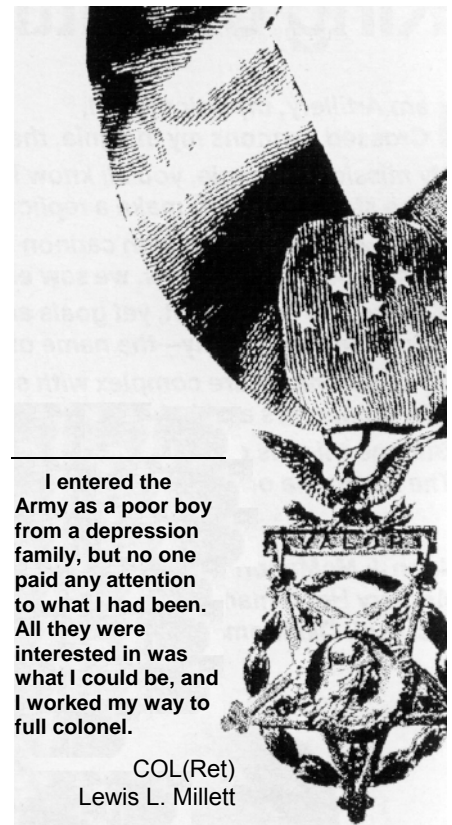
Millett was not exactly a neophyte to combat. He had enlisted in the Army Air Corps in 1940 but soon went absent without leave and enlisted in the Canadian Army in an attempt to get into the war faster. After Pearl Harbor, he returned to the United States and was courtmartialled for desertion. He was convicted, but the sentence was set aside because of the need for manpower early in the war. The conviction, however, remained in his records. During the North African Campaign, he was a tank driver, and

in 1944, he won a battlefield commission in Italy. He started his commissioned career as an FO in the 1st Special Service Force (the Devil's Brigade), the predecessor of Special Forces.

After Korea, Millett stayed in the Infantry and returned to Special Forces. He set up the Army's first reconnaissance-commando schools. During the Vietnam War, he established virtually every Ranger school in Southeast Asia. Millett retired as a colonel in 1973. His Medal of Honor is currently on display at the Artillery Museum at Fort Sill, where it is the centerpiece of the Artillery Medal of Honor exhibit.



Colonel (Ret.) Lewis L. Millett



I entered the Army as a poor boy from a depression family, but no one paid any attention to what I had been. All they were interested in was what I could be, and I worked my way to full colonel.

COL(Ret)  
Lewis L. Millett

## Vietnam

After almost 15 years, the Vietnam War is still shrouded in controversy. Whether or not it really was different than other wars, there was no difference in the caliber of its heroes. The stories of the Artillery's Medal of Honor winners bear this out. They are strikingly similar to those of other wars.

One of the consequences of the nonlinear nature of the fighting in Vietnam was that artillery firing positions probably were closer to and in more direct contact with enemy infantry than at any time since the Civil War. As a result, some of the artillery Medal of Honor citations are strikingly similar to those of the Civil War.

Staff Sergeant Webster Anderson was a gun chief in the 2-320th Field Artillery (Airborne) when he won the Medal of Honor in October 1967. His battery was hit by a large North Vietnamese force near Tam Ky, and the first wave breached the defensive perimeter. Anderson mounted the parapet of his gun's position and controlled direct fire into the advancing enemy. Two enemy grenades knocked him down and severely wounded his legs. But he propped himself up against the parapet and continued to direct the firing. Another grenade landed in his

Action	Civil War					
	War	Phillipines	WW I	WW II	Korea	Vietnam
Capturing/Recapturing Flags	11					
Capturing/Recapturing Guns	7					
Command under Fire	13		1	2		2
Cannoneer/Gun Crew/Mortar Crew	14			1		1
Non-Cannoneer on the Guns	25	2		1		
Infantry Action	24	4		4	4	
Saving Comrades	4			2	3	5
Forward Observer				3	3	4
Air Mission			1			1

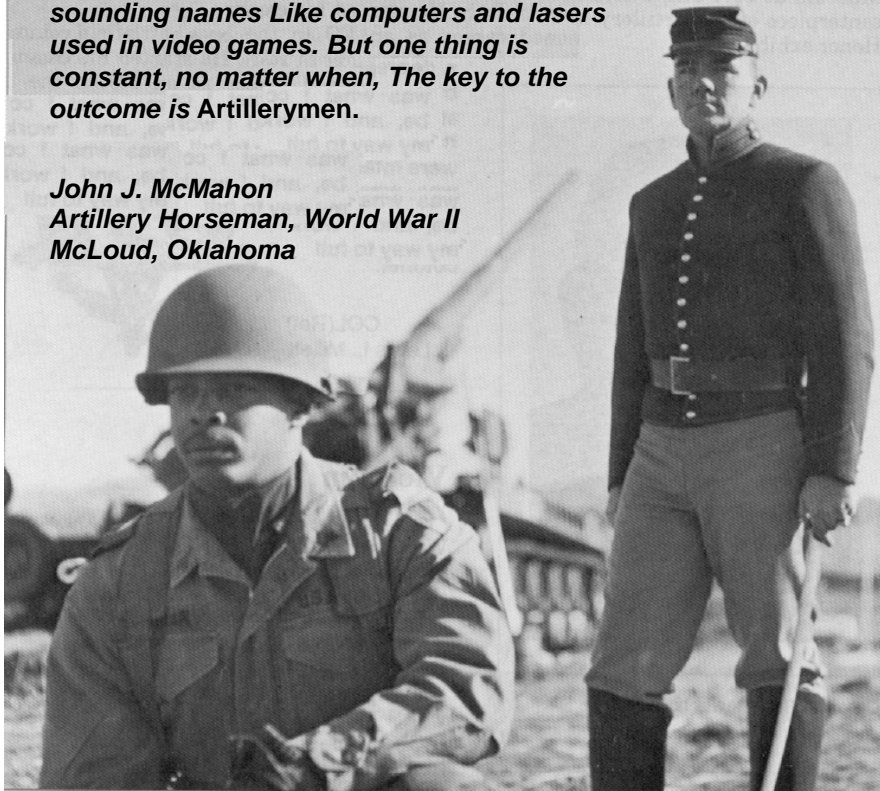
\*Four citations in the Civil War were written too vaguely to categorize.

Categories of Artillery Actions that Won Medals of Honor\*

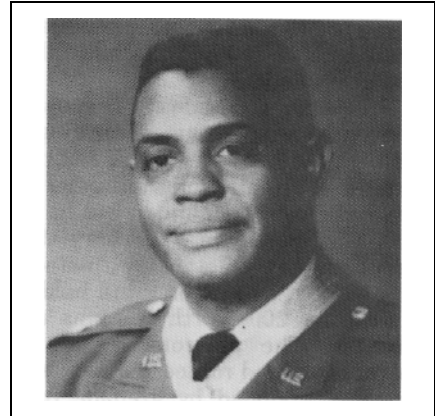
# King of Battle

**I** am Artillery, my color is red, Crossed  
 cannons my insignia, the battlefield my bed.  
 My mission is simple, you all know it well,  
 Place steel on target, make a replica of hell.  
 Once war was simple, with cannon and ball,  
 From fixed gun positions, we saw enemy fall.  
 Modern war is different, yet goals are the same,  
 Destroying the enemy—the name of the game.  
 My components are complex with strange  
 sounding names Like computers and lasers  
 used in video games. But one thing is  
 constant, no matter when, The key to the  
 outcome is Artillerymen.

**John J. McMahon**  
 Artillery Horseman, World War II  
 McLoud, Oklahoma




led two counterattacks and was wounded three times. Lieutenant Colonel Rogers is one of only two battalion commanders to win the Medal of Honor during the Vietnam War. He's also the only artilleryman to win the Medal of Honor while in command of a battalion. He retired from the Army as a major general.

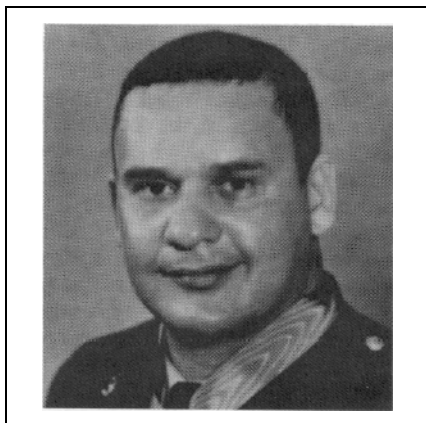


**Lieutenant Colonel Charles C. Rogers**

## Conclusion

The artilleryman who fights as an infantryman, the leader who remains in command under the most adverse of conditions and the non-artilleryman who becomes a cannoneer in the heat of combat—these are the themes that dominate the stories of the Artillery's Medal of Honor winners. Each of these scenarios first appeared during the Civil War, and each has been repeated many times since. Within the past 45 years, the forward observer scenario also has become a major theme.

The essence of the Artillery's Medal of Honor winners and the branch they served was best summed up by Staff Sergeant Webster Anderson, "You've got to keep your mental stability when you're in charge of people. It's your duty to continue fighting until you can't fight any more." Sergeant Anderson has the warrior spirit. 



**Staff Sergeant Webster Anderson**

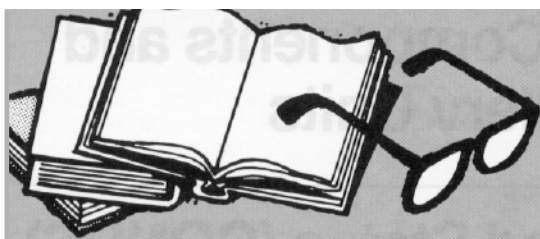
gun pit near one of his wounded men. Anderson rolled over, grabbed the grenade and tossed it over the parapet—but it exploded as soon as it left his hand. Although only semi-conscious, Anderson refused medical treatment and remained in command of his position until the enemy had been beaten back. Anderson survived, but he lost both legs and his hand.

The story of Lieutenant Colonel Charles C. Rogers, Commander of the 1st Battalion, 5th Field Artillery, is similar to Anderson's just as it is similar to Ames' and Dickey's in the Civil War. In November 1969, Rogers' forward fire base was hit by enemy rockets and mortars followed by a human-wave attack. Rogers personally

**Major David T. Zabecki, Field Artillery, U.S. Army Reserve(USAR), has written several articles for *Field Artillery*. This article is a brief summary of a recently published monograph of the same name (Weapons and Warfare Press). He recently won the 1987 US Field Artillery Association's History Writing Contest with his article "Guns of Manchuria," which will appear in the April 1988 issue of *Field Artillery*. Major Zabecki was recently named contributing editor of *Military History* magazine. He is currently the Targeting Intelligence Officer for the USAR Military Intelligence Detachment supporting the NATO Central Army Group in Europe.**

*Field Artillery*





# Author's Guide

The mission of the Field Artillery is to Shoot, Move, and Communicate! And to that end, *Field Artillery* informs and stimulates artillerymen, other comrades in arms and interested civilians around the world. Our writers are professionals in artillery units or other organizations, all working for better fire support. Our writers are you. We need your expert and creative articles to keep our readers in "the know" about the leading edge of Field Artillery.

More than 250,000 professionals read all or part of each edition of *Field Artillery*. Like you, they're—

- Staying current on fire support issues;
- Looking for innovative solutions to problems in the field;
- Sharing controversial opinions; and
- Learning from history.

Therefore, when writing for us, your content should be thought provoking and useful. If your article is about the past, identify the lessons learned. If you're writing about current issues, present clear, logical arguments that solve problems. When predicting the future, apply the innovations to fire support, wherever possible.

We publish an issue every other month, each with a theme. Our new History issue will debut in August 1988 and will become an annual August theme. It'll include the articles winning the third annual United States Field Artillery Association's History Writing Contest. (See the story announcing the contest and rules in this issue.) Our final edition of the year is the Red Book, our annual report to all Redlegs on the state of the Branch.

Full-length articles usually are longer than feature articles. For a full-length article, send us 1,000 to 2,500 words—eight to 16 pages double-spaced typed. It may be longer if the subject clearly warrants the length. Our features include "Right by Piece," notes from units; "Fragments," news from our comrades in arms; "View from the Blockhouse," the latest from Fort Sill; "Redleg News," items of general interest; "Incoming," letters to the editor, and "On the Move," an update from the Chief of Field Artillery. We have no set length for feature articles, though they're usually a 1,000 words or less.

The cliché "A picture is worth 1,000 words" is true. When you include graphics with your article, you enhance your readers' understanding, make your article more appealing and easier to read, and increase your chances of publication. The graphics can be color or black and white photographs, slides, drawings, charts, graphs, maps, crests, etc.

The deadline for articles is about three and one-half months before the publication date of an issue. Therefore, if your article is relevant to October's theme, your deadline is in June.

We'll edit your manuscript to conform to our standards, our format and accepted English usage. Where it fits our theme and content purposes and in the interest of exposing your thoughts to the readers, we may

hold your article for a later issue or condense it to a letter to the editor.

You owe it to yourself as a professional—civilian or military...private or general...active or reserve component—to share your ideas for better fire support and a better Army. Send your manuscript, graphics and a biography to: **Field Artillery**, P.O. Box 33311, Fort Sill, OK 73503-0311. If you have questions, call the editor at area code 405 or AUTOVON 639-5121 or 6806.

## 1988 FIELD ARTILLERY THEMES

Publication Date	Theme	Article Deadline
February	Joint and Combined Operations	12 Oct 87
April	Survivability	4 Dec 87
June	Supporting the Maneuver Commander	8 Feb 88
August	History: Field Artillery in Combined Arms Operations	
	Contest -	15 Mar 88
	Regular -	4 Apr 88
October	Continuous Operations	6 Jun 88
December	Red Book (Annual Report)	8 Aug 88

## Standards for *Field Artillery* Articles

- Send a neat, double-space, typed manuscript with appropriate graphics by the deadline. The manuscript must be original and unpublished.

- Send a biography with your manuscript that includes your full name, rank, current assignment, address, AUTOVON or commercial number and experience relevant to your article topic.

- Be sure your facts are accurate and you document quotations or paraphrases. Send a copy of your copyright permission, as necessary.


- Be sure your arguments are logical and credible. Send a bibliography, as appropriate; however, we may omit it in the issue.

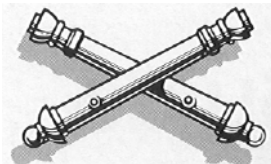
- Double check your article for classified information. *Field Artillery* publishes only unclassified information.

- Write clearly.

- Use active voice and descriptive, conversational words familiar to your readers. Avoid jargon and spell out acronyms.

- Write concise sentences, especially in technical articles.

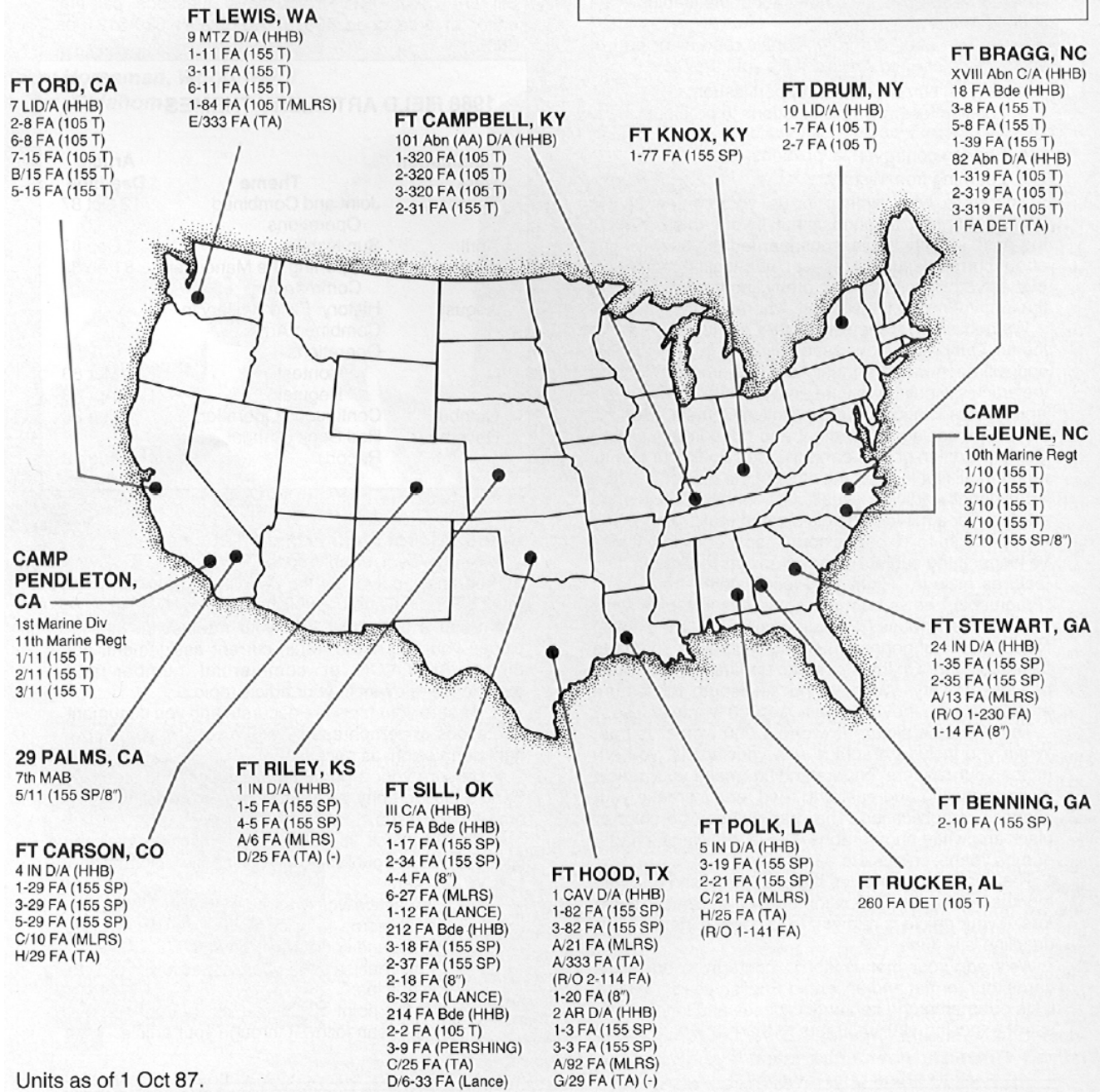
- Put the point of your article up front so your reader can follow it through your article. 



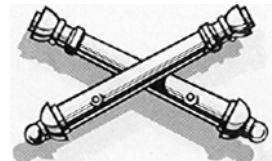
# US Army Active Components and Marine Field Artillery Units

## Continental United States (CONUS)

ARMY CONUS							
Corps Arty	Div Arty	FA Bde	FA Bn	FA Btry (Sep)	FA Det	TA Btry	TA Det
2	11	4	48	8	1	7	1



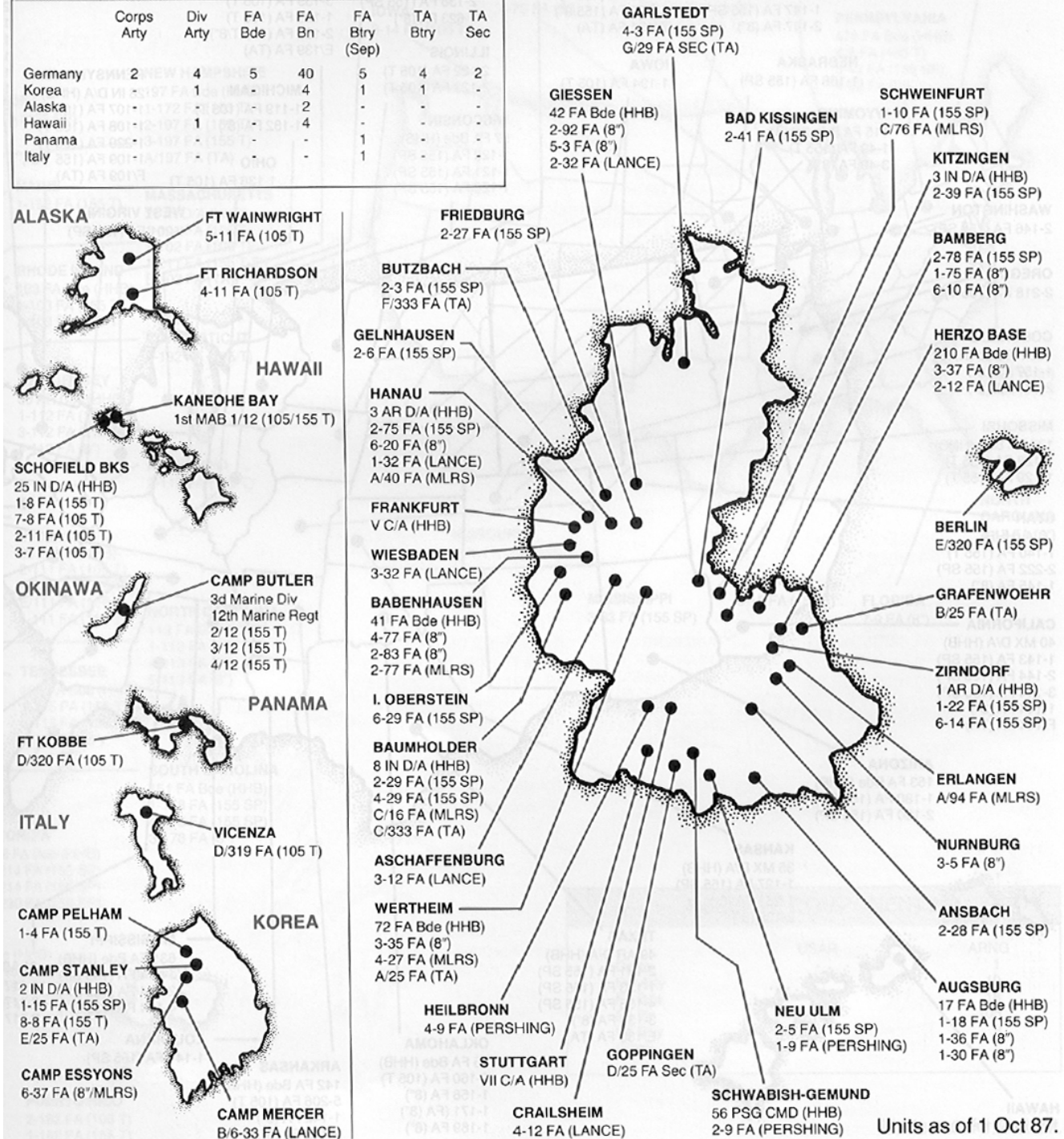
# US Army Active Components and Marine Field Artillery Units



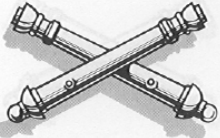
## Outside Continental United States (OCONUS)

ARMY OCONUS							
	Corps Arty	Div Arty	FA Bde	FA Bn	FA Btry (Sep)	TA Btry	TA Sec
Germany	2	4	5	40	5	4	2
Korea	-	1	-	4	1	1	-
Alaska	-	-	-	2	-	-	-
Hawaii	-	1	-	4	-	-	-
Panama	-	-	-	-	1	-	-
Italy	-	-	-	-	1	-	-

### FEDERAL REPUBLIC OF GERMANY (FRG)

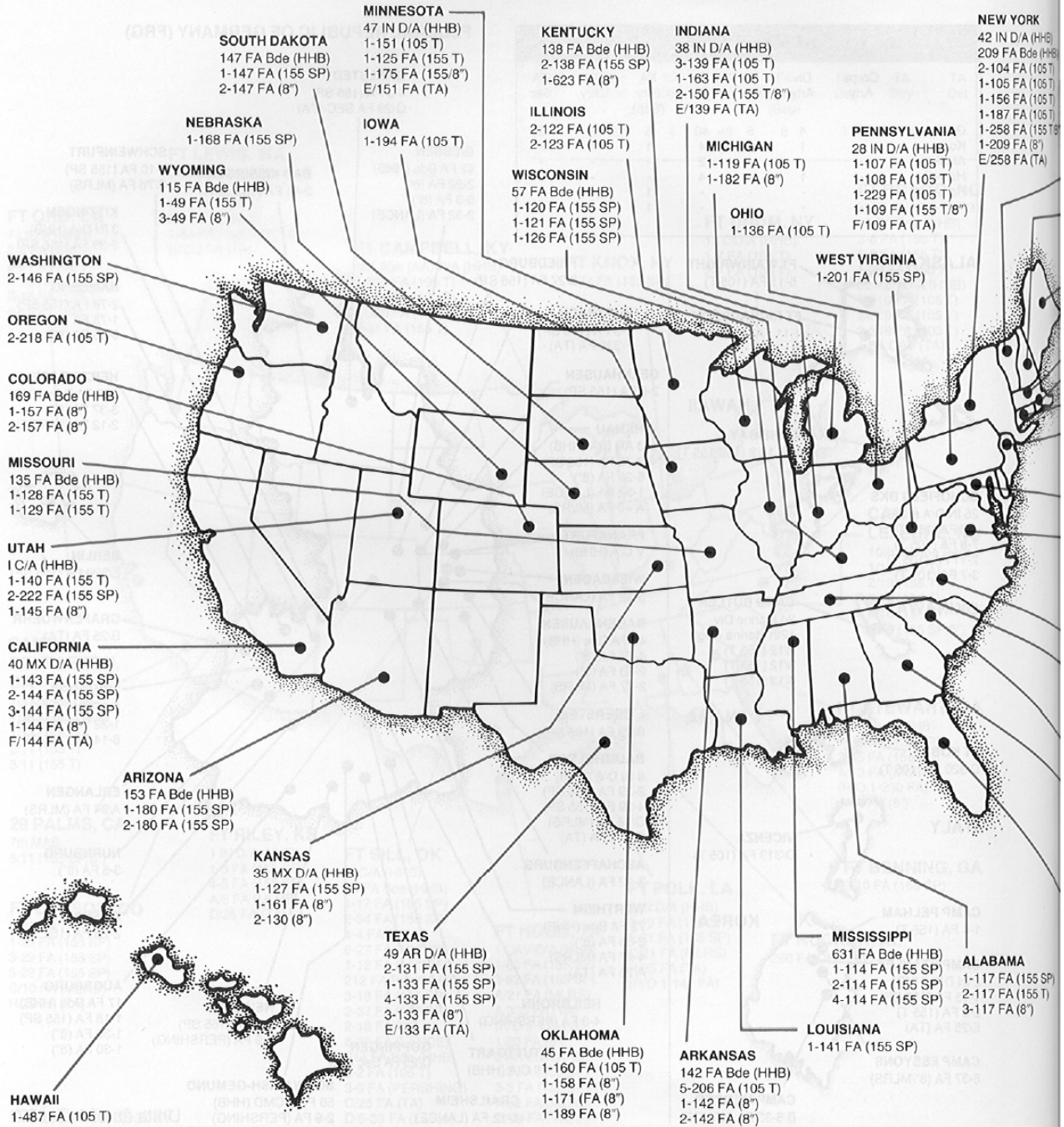


Units as of 1 Oct 87.

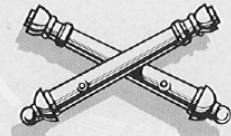


# US Army Reserve Component

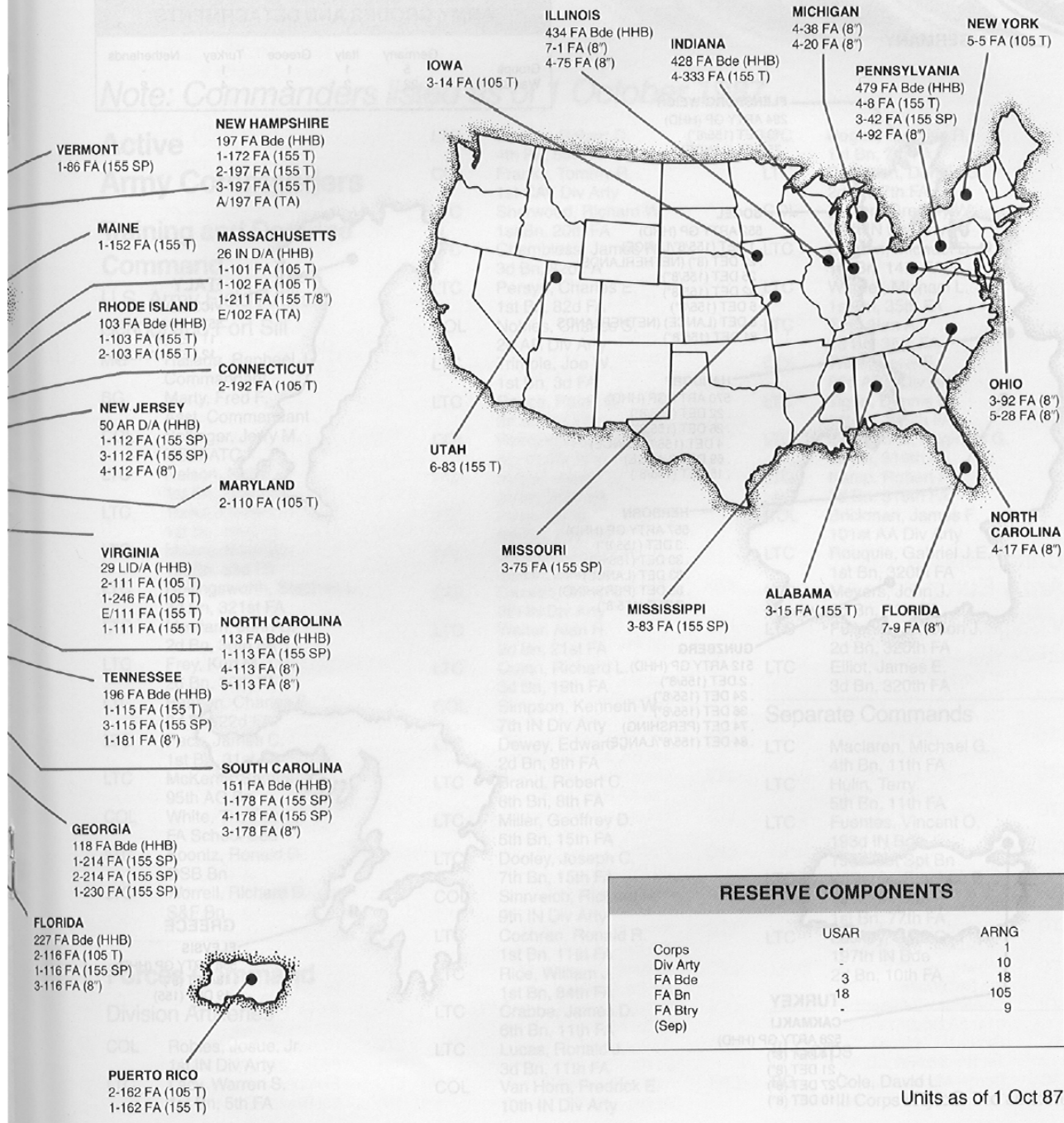
## Army National Guard



# ment Field Artillery Units

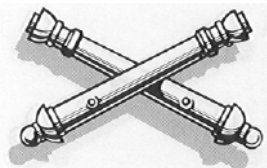


## Army Reserve



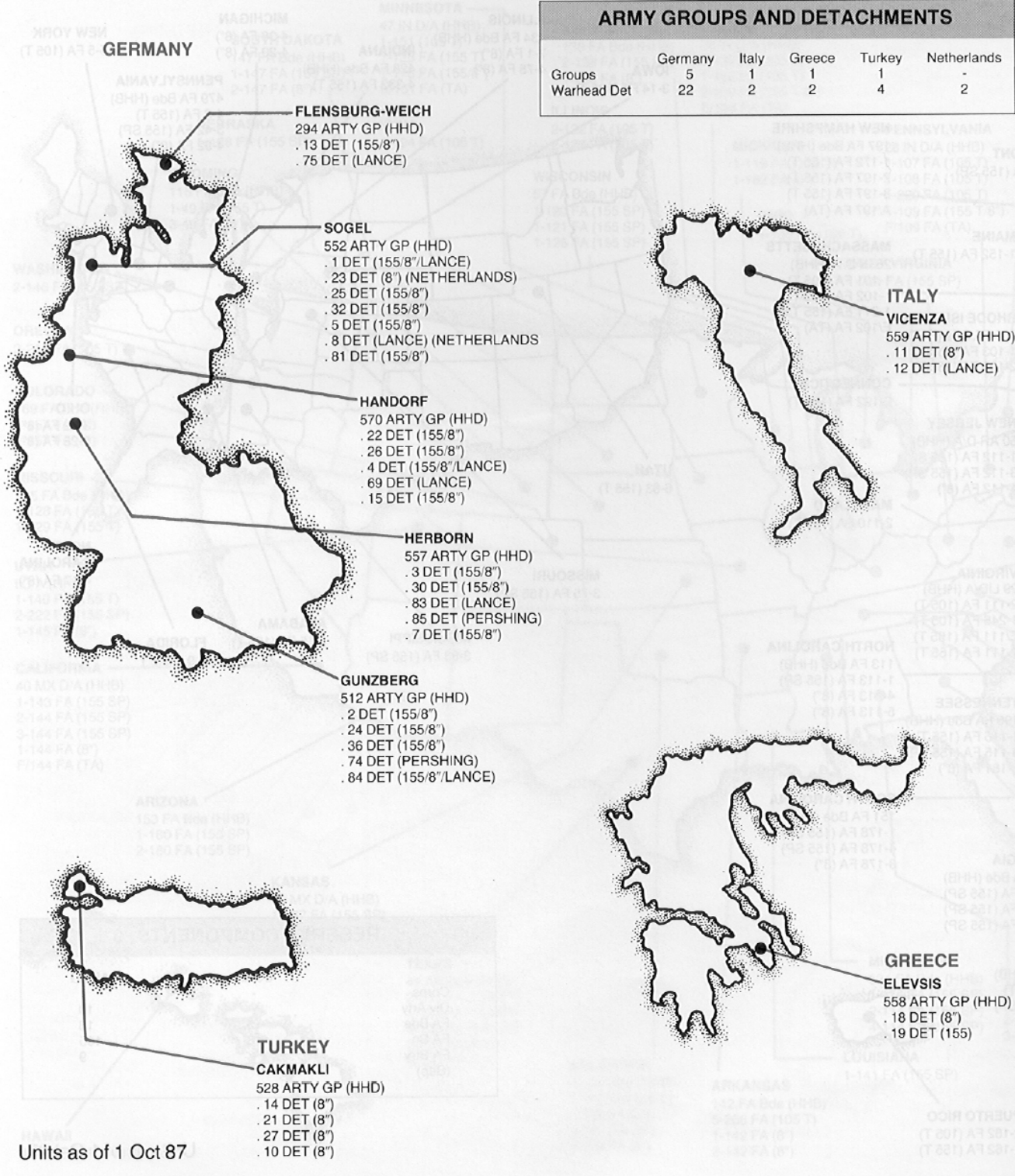
RESERVE COMPONENTS		
	USAR	ARNG
Corps	-	1
Div Arty	-	10
FA Bde	3	18
FA Bn	18	105
FA Btry	-	9
(Sep)	-	-

Units as of 1 Oct 87.

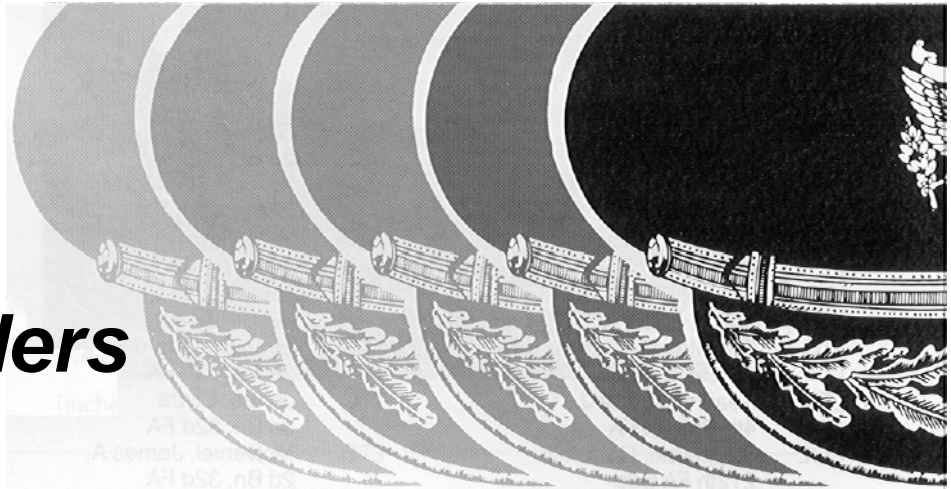


# NATO: United States Army Field Artillery Groups with Detachments (Det)

ARMY GROUPS AND DETACHMENTS					
	Germany	Italy	Greece	Turkey	Netherlands
Groups	5	1	1	1	-
Warhead Det	22	2	2	4	2



# Field Artillery Commanders



*Note: Commanders listed as of 1 October 1987*

## Active

### Army Commanders Training and Doctrine Command

U.S. Army Field Artillery  
School and Fort Sill

MG Hallada, Raphael J.  
Commandant  
BG Marty, Fred F.  
Asst. Commandant  
COL Sollinger, Jerry M.  
USAFATC  
LTC Nelson, Neil E.  
1st Bn, 78th FA  
LTC Tooke, Lamar  
1st Bn, 19th FA  
LTC Mazza, Meredith  
1st Bn, 33d FA  
LTC Hollingsworth, Stephen L.  
3d Bn, 321st FA  
LTC Merriam, John C.  
2d Bn, 30th FA  
LTC Frey, Kurt M.  
2d Bn, 80th FA  
LTC Beeson, Charles S.  
3d Bn, 22d FA  
LTC Pack, James C.  
1st Bn, 31st FA  
LTC McKenty, Samuel C.  
95th AG Bn  
COL White, Thomas R.  
FA School Bde  
LTC Koontz, Ronald D.  
OSB Bn  
LTC Worrell, Richard D.  
S&F Bn

## Forces Command

Division Artilleries

COL Robles, Josue, Jr.  
1st IN Div Arty  
LTC Lacy, Warren S.  
1st Bn, 5th FA  
LTC Sander, Robert D.  
4th Bn, 5th FA

COL Franks, Tommy R.  
1st CAV Div Arty  
LTC Sherwood, Richard W.  
1st Bn, 20th FA  
LTC Chambless, James R.  
3d Bn, 82d FA  
LTC Persyn, Charles E.  
1st Bn, 82d FA  
COL Nobles, Charles S.  
2d AR Div Arty  
LTC Trimble, Joe W.  
1st Bn, 3d FA  
LTC Reece, Ralph G.  
3d Bn, 3d FA  
COL Beddingfield, Robert  
4th IN Div Arty  
LTC Sleder, Albert, Jr.  
3d Bn, 29th FA  
LTC Page, Gene  
5th Bn, 29th FA  
LTC Jackson, James H.  
1st Bn, 29th FA  
COL Cavado, John R.  
5th IN Div Arty  
LTC Walter, Alan H.  
2d Bn, 21st FA  
LTC Quinn, Richard L.  
3d Bn, 19th FA  
COL Simpson, Kenneth W.  
7th IN Div Arty  
LTC Dewey, Edward J.  
2d Bn, 8th FA  
LTC Brand, Robert C.  
6th Bn, 8th FA  
LTC Miller, Geoffrey D.  
5th Bn, 15th FA  
LTC Dooley, Joseph C.  
7th Bn, 15th FA  
COL Sinnreich, Richard H.  
9th IN Div Arty  
LTC Cochran, Ronald R.  
1st Bn, 11th FA  
LTC Rice, William J.  
1st Bn, 84th FA  
LTC Crabbe, James D.  
6th Bn, 11th FA  
LTC Lucas, Ronald J.  
3d Bn, 11th FA  
COL Van Horn, Fredrick E.  
10th IN Div Arty

LTC Hogan, Thomas R.  
1st Bn, 7th FA  
LTC Davidson, Donald G.  
2d Bn, 7th FA  
COL Mason, Gregory W.  
24th IN Div Arty  
LTC O'Brien, Michael D.  
1st Bn, 14th FA  
LTC Warner, Michael L.  
1st Bn, 35th FA  
LTC Fox, Alan A.  
2d Bn, 35th FA  
COL Willis, Deral E.  
82d ABN Div Arty  
LTC Tighe, Dennis W.  
1st Bn, 319th FA  
LTC Clemmons, Reginald G.  
2d Bn, 319th FA  
LTC Kemp, Robert F.  
3d Bn, 319th FA  
COL Brickman, James F.  
101st AA Div Arty  
LTC Rouquie, Gabriel J.E.  
1st Bn, 320th FA  
LTC Meyers, John J.  
2d Bn, 31st FA  
LTC Fullenkamp, Leon J.  
2d Bn, 320th FA  
LTC Elliot, James E.  
3d Bn, 320th FA

## Separate Commands

LTC Maclaren, Michael G.  
4th Bn, 11th FA  
LTC Hulin, Terry  
5th Bn, 11th FA  
LTC Fuentes, Vincent O.  
193d IN Bde  
193d Cbt Spt Bn  
LTC Williams, Stephen D.  
194th IN Bde  
1st Bn, 77th FA  
LTC Lackey, Glen G.  
197th IN Bde  
2d Bn, 10th FA

## III Corps

BG Cole, David L.  
III Corps Arty

COL Barron, Max R.  
75th FA Bde

LTC Rhoades, George H.  
1st Bn, 12th FA

LTC Hawthorne, Everett E.  
1st Bn, 17th FA

LTC Robyn, Eric W.  
2d Bn, 34th FA

LTC Schottel, David K.  
6th Bn, 27th FA

LTC Keating, Arthur J.  
4th Bn, 4th FA

COL Stryjewski, Robert H.  
212th FA Bde

LTC Moon, Gary L.  
2d Bn, 18th FA

LTC Witherspoon, Richard H.  
2d Bn, 37th FA

LTC Roszkowski, Joseph A.  
3d Bn, 18th FA

LTC Teasdale, Kenneth W.  
6th Bn, 32d FA

COL Bondshu, Arthur  
214th FA Bde

LTC Compton, George J.  
2d Bn, 2d FA

LTC Cunningham, James E.  
3d Bn, 9th FA

COL Metelko, James E.  
XVIII Abn Corps Arty  
18th FA Bde

LTC McNutt, William A.  
1st Bn, 39th FA

LTC Phelps, Dennis A.  
3d Bn, 8th FA

LTC Brown, Thomas L.  
5th Bn, 8th FA

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## United States Army Europe

### V Corps

BG Reynard, Richard L.  
V Corps Arty

COL Magruder, Robert B.  
3d AR Div Arty

LTC Gloriod, John A.  
2d Bn, 3d FA

LTC Berry, Frederick S.  
2d Bn, 6th FA

LTC Scales, Roy T.  
2d Bn, 27th FA

COL Pickler, John M.  
8th IN Div Arty

LTC Dayton, Keith W.  
4th Bn, 29th FA

LTC Shoemaker, Christopher  
2d Bn, 29th FA

LTC Brown, Walter B.  
6th Bn, 29th FA

COL Chapman, James H.  
41st FA Bde

LTC Glowaski, Harry J.  
1st Bn, 32d FA

LTC Burns, Michael A.  
2d Bn, 75th FA

LTC Barcellos, Terrance  
2d Bn, 83d FA

LTC Ferezan, Daniel M.  
2d Bn, 77th FA

LTC Ford, Jerry D.  
4th Bn, 77th FA

COL Roe, Raymond T.  
42d FA Bde

LTC Evans, Richard E.  
2d Bn, 92d FA

LTC Jonas, Clyde  
3d Bn, 32d FA

LTC McDaniel, James A.  
2d Bn, 32d FA

LTC Porter, Danny S.  
5th Bn, 3d FA

LTC Durham, Orin H.  
2d Bn, 20th FA

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### VII Corps

BG Eggleston, Howard C.  
VII Corps Arty

COL Allen, Michael B.  
1st AR Div Arty

LTC Cooper, Billy R.  
1st Bn, 22d FA

LTC Lambert, Alan E.  
6th Bn, 14th FA

LTC Horn, Billy W.  
2d Bn, 78th FA

COL Okeefe, John J.  
3d IN Div Arty

LTC Paolucci, John N.  
1st Bn, 10th FA

LTC Mayew, Walter L.  
2d Bn, 39th FA

LTC Merritt, Kevin F.  
2d Bn, 41st FA

COL Anderson, Edward G.  
17th FA Bde

LTC Nagy, Ross L.  
1st Bn, 18th FA

LTC Jones, William L.  
1st Bn, 30th FA

LTC Cline, Dennis C.  
1st Bn, 36th FA

LTC Bowers, William T.  
4th Bn, 12th FA

COL Hegg, George H.  
72d FA Bde

LTC Hill, Dennis K.  
3d Bn, 12th FA

LTC Rains, Roger A.  
3d Bn, 35th FA

LTC Anckaitis, Robert G.  
1st Bn, 75th FA

LTC Newell, James W.  
4th Bn, 27th FA

LTC Monette, Theodore A.  
6th Bn, 10th FA

COL Potter, Clifton A.  
210th FA Bde

LTC Ripley, Ralph R.

2d Bn, 28th FA

LTC Kimball, Robert J.  
2d Bn, 12th FA

LTC Pier, William S.  
3d Bn, 5th FA

LTC Clark, Roy L.  
3d Bn, 37th FA

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### 56th Field Artillery Command

BG Bean, Roger K.  
56th FA Cmd

LTC Pasquarett, Michael J.  
2d Bn, 9th FA

LTC Shadburn, Robert P.  
1st Bn, 9th FA

LTC Taylor, Douglas E.  
4th Bn, 9th FA  
59th Ordnance Brigade

LTC Johnson, Jeffrey M.  
294th Arty Group

LTC Stinnett, George H.  
512th Arty Group

LTC Vanderclute, Burt A.  
552d Arty Group

LTC Garlitz, Richard L.  
557th Arty Group

LTC Morelock, Jerry D.  
570th Arty Group

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### Southern European Task Force

LTC Johnson, Clifton A. (XO)  
559th Arty Group

COL Offer, Robert D., Jr.  
528th Arty Group

COL Miller, Frank L., Jr.  
558th Arty Group

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### Separate Commands

COL Sanchez, Washington  
Graffenwoehr TA

LTC Culling, Thomas E.  
2d Bn, 5th FA (1st ID Fwd)

LTC Byrnes, Kevin P.  
4th Bn, 3d FA (2d AD Fwd)

LTC Marcello, John J.  
Cbt Spt Bn, Berlin Bde

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### Western Command

COL Swain, Thomas E.  
25th IN Div Arty

LTC Coan, George P.  
2d Bn, 11th FA

LTC Sakuma, Steven M.  
7th Bn, 8th FA

LTC Hanretta, Kevin T.  
3d Bn, 7th FA

LTC Fletcher, John E.  
1st Bn, 8th FA



## Korea and Eighth Army

COL Campbell, Delwin M.  
2d IN Div Arty  
LTC Russell, William T.  
1st Bn, 15th FA  
LTC Rollison, Ronald  
1st Bn, 4th FA  
LTC Nyberg, James E.  
6th Bn, 37th FA  
LTC Crawford, Steven L.  
8th Bn, 8th FA

## Army National Guard Commanders

### I Corps

BG Miller, James M.  
I Corps Arty  
COL Alsip, Tommy G.  
45th FA Bde  
COL Kaplan, Lawrence P.  
57th FA Bde  
COL Valente, Richard J.  
103d FA Bde  
COL Martin, James R.  
113th FA Bde  
COL Castillon, Henry  
115th FA Bde  
COL Shaver, Fred W.  
118th FA Bde  
COL Norman, Duane M.  
135th FA Bde  
COL Ice, Thomas R.  
138th FA Bde  
COL Holt, Richard L., Jr.  
142d FA Bde  
COL Edwards, Ernest T.  
147th FA Bde  
COL Baldwin, Edward S.  
151st FA Bde  
COL Pilcher, David H.  
153d FA Bde  
COL Boyersmith, Joseph T.  
169th FA Bde  
COL Levi, Carl E.  
196th FA Bde  
COL Janelle, Gerald F.  
197th FA Bde  
COL Brill, Joseph N.  
209th FA Bde  
COL Bass, Eugene M.  
227th FA Bde  
COL Brantley, Shelby K.  
631st FA Bde

### Division Artilleries

COL Ambrose, William P.  
26th IN Div Arty  
COL Perugino, Joseph F.  
28th IN Div Arty  
COL Tyler, Terry J.  
29th IN Div Arty  
COL Tincher, Ronald D.  
35th IN Div Arty



CPT John Florence

COL Cox, Donald D.  
38th IN Div Arty  
COL Morrison, Edgar B.  
40th IN Div Arty  
COL Coggins, Norbert J.  
42d IN Div Arty  
COL Delgehausen, Rogert D.  
47th IN Div Arty  
COL Harmon, David L.  
49th AR Div Arty  
COL Pieretti, Hector G.  
50th AR Div Arty  
MAJ Gaffney, John J.  
3d Bn, 15th FA  
LTC Carson, Chester P., Jr.  
3d Bn, 42d FA  
3d Bn, 75th FA

## Army Reserve Commanders

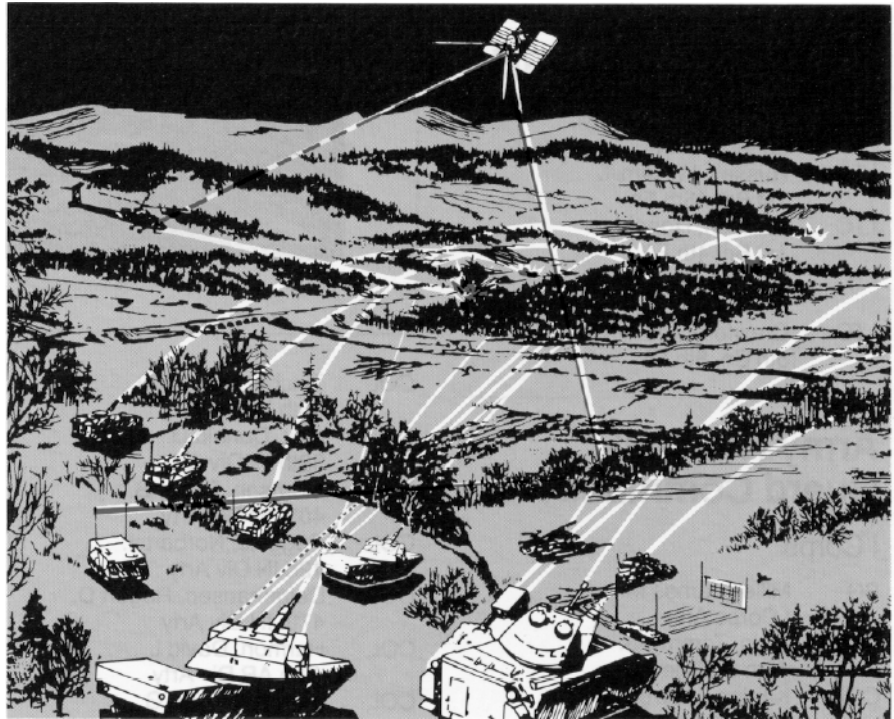
COL Wetterstrom, Robert S.  
428th FA Bde  
LTC Noiro, George V.  
4th Bn, 20th FA  
LTC Grammel, Ronald G.  
4th Bn, 38th FA  
MAJ(P) Kruzar, Michael E.  
4th Bn, 333d FA  
LTC Grunewald, Robert E.  
434th FA Bde  
LTC Bracki, Robert F.  
4th Bn, 75th FA  
LTC Cimely, Roy  
7th Bn, 1st FA  
COL Armstrong, Robert R.  
479th FA Bde  
LTC Whitten, Thomas C.  
4th Bn, 92d FA  
LTC Bentsen, Gary M.  
4th Bn, 8th FA  
MAJ(P) Thompson, Charles L.  
3d Bn, 83d FA  
MAJ Read, George W.S.  
7th Bn, 9th FA  
LTC Tucker, David D.  
6th Bn, 8th FA  
LTC Ringle, John M.  
4th Bn, 17th FA  
MAJ(P) Hyle, Francis M.  
5th Bn, 28th FA  
MAJ(P) Miller, Gary F.  
3d Bn, 92d FA  
LTC Ruchti, Larry D.  
3d Bn, 14th FA  
LTC Colt, Richard S.  
5th Bn, 5th FA  
MAJ White, Ray A.

## US Marine Commanders

Col Blair, Gary A.  
10th Marine Regt  
LtCol Spain, William R.  
1st Bn/10th Mar  
LtCol Morgan, Terrence C.  
2d Bn/10th Mar  
LtCol Smythe, Edward A.  
3d Bn/10th Mar  
LtCol Wagner, John H.  
4th Bn/10th Mar  
LtCol Milo, Barry C.  
5th Bn/10th Mar  
Col Pipta, John  
11th Marine Regt  
LtCol Lindeman, Dennis C.  
1st Bn/11th Mar  
LtCol Basel, John M.  
2d Bn/11th Mar  
LtCol Smith, Lawrence W.  
3d Bn/11th Mar  
LtCol Chase, Jerry C.  
5th Bn/11th Mar  
Col Bartels, William C.  
12th Marine Regt  
LtCol Hudak, Jerome J.  
1st Bn/12th Mar  
LtCol Ryan, James R.  
2d Bn/12th Mar  
LtCol Palermo, Anthony M.  
3d Bn/12th Mar  
LtCol Kuck, George V., Jr.  
4th Bn/12th Mar  
Col Ressimyer, John A.  
14th Marine Regt  
LtCol Klemmer, Grover R.  
1st Bn/14th Mar  
LtCol English, Bill J.  
2d Bn/14th Mar  
LtCol Shimonis, Peter J.  
3d Bn/14th Mar  
LtCol Hill, Don W.  
4th Bn/14th Mar  
LtCol Yorck, David C.  
5th Bn/14th Mar

We must hold our minds alert and receptive to the application of unglimped methods and weapons. The next war will be won in the future, not in the past. We must go on, or we will go under.  
General Douglas MacArthur 1931

## FIRE SUPPORT IN THE 21ST CENTURY



*The large group of dispersed tanks moved quietly over the rough terrain. Their only sound was a low vibration as they rode on an internally generated cushion of air. The commander of this force felt uneasy, even though his tanks were averaging 60 miles per hour, and he was still 40 to 50 miles away from the nearest action. He knew his tanks were vulnerable to enemy acquisition and attack. What he didn't know was that, in the coming moments, his fears would be justified.*

*As the lead tank cleared the edge of a plowed field, it alerted the seeker of a remotely placed surveillance system. Instantaneously, the camouflaged ground sensor identified the vehicle as an enemy tank. It estimated its speed and direction and transmitted this information to a satellite orbiting high above the battlefield. The onboard surveillance devices immediately located the other tanks in the force. Within seconds, a short digital burst of data was sent to selected artillery weapons that were dispersed over a wide area. Each weapon computed firing data to the proposed zone of attack. Before two minutes had elapsed, the first of a number of "brilliant" projectiles was flying downrange, searching the attack area and homing in on specific targets. All in all, the attack had taken less than five minutes to destroy a force of 15 enemy tanks.*

**T**he incident just described is one possible scenario involving fire support in the middle of the next century. Although certain aspects of the story may sound farfetched, the events are within the realm of technological feasibility. We know the mission of fire support will be much the same in 70 years as it is today. Fire support will continue to underpin the mission of the maneuver force, whatever that force may look like—adding depth to the battle on land, in the air or in space. The difference will be that emerging technology gives us an unprecedented opportunity to enhance our future fighting capabilities while improving force structure and survivability.

Our ability to foresee the future of fire

support in the 21st Century is limited only by our imaginations. Picture how a soldier stationed at Fort Sill in the 1880s would have reacted to the technological advancements that helped us win the two world wars. The fact is, the latter part of the 19th Century is distinctly similar to this part of the 20th Century. One could characterize both periods as being on the brink of revolutionary technological breakthroughs.

Robotic systems—that intercommunicate with other robots both on the ground, in the air and in space—may be the mainstay of our force. Technologies will allow for the attack of targets at extended ranges and with weapons and munitions that radically

differ from our current systems. The key to exploiting these emerging technologies is to go beyond our conventional thinking, so we can capitalize on future possibilities. If we can do this, the future of fire support will be unlimited.

Current Army leadership has recognized the need to identify the emerging technologies, which will allow us to defeat the future Threat. General Maxwell Thurman, Training and Doctrine Command (TRADOC) Commander, recently directed each TRADOC school commandant to identify the rapidly developing technologies needed to exploit the nation's future scientific capabilities. Each school

must identify and program advanced education requirements board (AERB) positions to ensure the Army emphasizes the development of new systems. The Army will send officers to world-class universities and for training with industry to provide qualified officers to AERB positions.

## Robotics and Artificial Intelligence

A combination of robotic and artificial intelligence technologies will provide a force never before seen on the battlefield. Robotics is the ability of machines to perform a variety of manipulative tasks. Artificial intelligence is the ability of machines to learn, apply knowledge, reason, make decisions and communicate ideas.

### Robotics

Robotic fire support systems will be everywhere on the battlefield supporting the maneuver forces in many of the same ways we use current systems today. Robotic reconnaissance and surveillance systems will travel over terrain and maneuver around obstacles to reach positions beside robotic maneuver forces. We will use forward sensor systems to identify various targets through the spectrum of vehicle signature, friend or foe, and to provide automatic accurate locations to the weapon systems. These sensors will be able to gather other intelligence information based on their own decisions rather than programmed orders. This real-time acquisition,

processing and distribution of combat information will help the commander make smart decisions about the employment of all battlefield assets.

Artillery or remotely piloted vehicles (RPVs) may deliver robotic sensors deep within the Threat's rear area. These remote sensors will detect visual, electronic, seismic, acoustic or magnetic signatures and send the information to weapons and intelligence systems.

Robotic systems in a self-propelled, unmanned howitzer and ammunition resupply vehicle will improve semi-autonomous operations, decrease laborious tasks normally performed by soldiers and reduce vehicle signature. Soldiers will be physically separated from howitzer positions that are vulnerable to Threat counterfire attacks. The howitzer will be transported or led to its general positioning area and then instructed to move to a position to provide support. It will plan its own routes to new locations and be able to move when it comes under attack. A robotic resupply vehicle will provide various selected munitions and fuel to the howitzer upon the howitzer's request. The robotic surveillance systems will send targeting data over high-speed, integrated systems to the howitzer and control nodes.

Through a microprocessor, the howitzer will compute firing data for target attack. It will move the tube to the correct azimuth and elevation, set fuzes on the projectiles and manipulate the munitions into the tube for firing. The howitzer's internal decision-making system will compute a target-intercept point based on information from

surveillance systems. It also will identify the type of rounds to use and deliver the appropriate munitions to destroy the target. The target acquisition system will be able to relay target damage assessment to the manned howitzer firing section before the mission ends.

### Artificial Intelligence

Artificial intelligence will give the robotic fire support systems the ability to consider alternatives, make estimates and recommend courses of action during the decision-making process. This ability to make decisions will be based on subject-matter-expert input into the program software. Predictive diagnostics will allow robotic systems to identify when a system will have maintenance problems and alert the maintenance system when problems do occur. The software will allow the system limited self-fixing abilities, which will correct predicted maintenance problems. Manned fire support systems also will have predictive diagnostics, allowing future problems "to be fixed" before they actually happen.

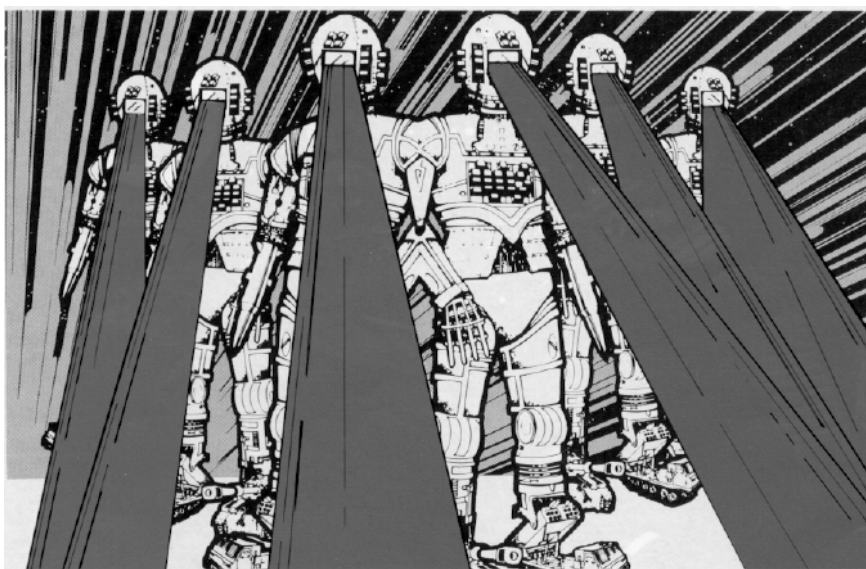
## State of the Art Propellants

The robotic howitzers, future manned howitzers and rocket and missile systems will be able to provide accurate fires at dramatically increased ranges through technological advancements in propulsion. Several technologies are candidates for the future propulsion systems.

### Liquid Propellants

Howitzer munitions and automatic crew-served weapons could be fired through the use of liquid propellants. In this technology, a regenerative liquid is ignited to fire all types of munitions, replacing the current powder-bag charges. The liquid propellant is metered or injected into a chamber under high pressure. The ease and speed of this metering process allows for an increased rate of fire and for infinite zoning, providing the benefit of one-gun time-on-target with three to four rounds.

The liquid propellant occupies less volume than current bag charges, allowing for a significant increase in onboard storage of munitions. Additionally, because liquid propellant is less combustible than current bag powder, it will not explode unless under pressure. This capability decreases the likelihood of a catastrophic kill of the howitzer or



Robotics, systems of the future, will save our most precious battlefield resource—soldiers.

resupply vehicle. Propulsion with the liquid propellant also reduces the visual firing signature of the howitzer system because there is neither smoke nor flash. It enhances ammunition resupply because there is no wasted propellant, and it reduces the requirement for propellant packaging material and dunnage.

### ***Electrothermal Propellants***

Electrothermal technology provides a second propulsion technique. Electricity is generated from a power source and is used to heat a plasma, which in turn heats up a liquid like water. The liquid converts to a gas that expands and launches the projectile. Power sources for electricity may be generators or solar cells.

The electrothermal propulsion provides greater accuracy to long-range fires. The manipulation of liquids and electricity eases the automation of ammunition handling in unmanned systems. Electrothermal technology uses less hazardous propellants than does the current system, enhancing survivability.

### ***Electromagnetic Propellants***

Electromagnetic guns, a third type of propulsion, will provide greater muzzle velocity and longer range. It also will use smaller rounds that store more easily. Electrical pulses produce the propulsion by generating strong magnetic fields that launch the projectiles. Technological advances in super-efficient capacitors allow us to store huge electrical charges for sustained rates of fire.

Electromagnetic gun technologies will ease the manipulation of ammunition for both ground- and space-based weapons. The capacity to carry more ammunition will increase significantly because a propelling liquid or powder is not necessary. The capacity also will increase because the hypervelocity speed created allows a smaller projectile to accomplish desired effects on the target.

### ***Nuclear Propellants***

Nuclear propulsion will be available in the 21st Century. We expect to be able to encapsulate nuclear fuel in small ceramic pellets to generate a nuclear reaction. We can pass hydrogen or a similar material over the pellets, heat them and use them to propel projectiles, rockets or missiles to attack targets. We can then reuse the nuclear ceramic pellets. By transporting the pellets and their liquid moderator separately, we increase safety. This will be extremely important for propulsion of

weapons in space.

## **Space Systems**

Space will be the environment for many of the future fire support systems. Satellites currently provide intelligence information used mainly by national information and security agencies. But in the 21st Century, space-based target acquisition systems will provide real-time targeting data to the fire support weapon systems on the ground or in space.

These target acquisition systems will have many capabilities. They may be able to automatically recognize vehicle signature and instantly determine friend or foe. Directly linked to the command and control system, these space systems will allow us to cue to a specific battlefield activity. Space-based, automatic meteorological equipment will provide the commander exact target-area weather information to enhance the employment of brilliant munitions, directed energy and other future munitions.

Although nearly every system is capable of autonomous operations, one shouldn't overlook the possibility of a space-based fire support coordinator (FSCOORD). The space FSCOORD would occupy the ultimate "high ground" and could truly provide the necessary information for battlefield synchronization. The FSCOORD would be able to redirect space-based sensors instantly to keep abreast of a rapidly

changing situation. We would no longer have to schedule satellite coverage.

In the 21st Century, rapid troop and equipment transport would be accomplished with a space plane. Troops and equipment literally could be moved to the other side of the world in only a couple of hours, allowing the entire force to be responsive to the nation's needs.

## **Directed-Energy Technology**

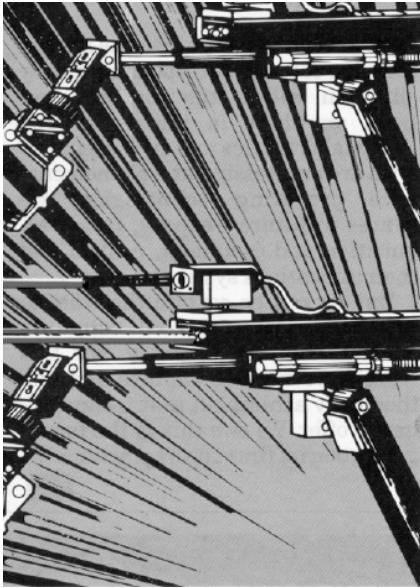
Cannon, rocket and missile systems still will provide a majority of our indirect fires, but directed-energy weapons also will be part of our arsenal. Directed energy is defined as an aimed beam of electromagnetic energy, atomic or sub-atomic particles, which is concentrated into a highly directional beam. We will use it in communications as well as weapons systems on the 21st Century battlefield. For fire support, we'll use lasers, radio frequency weapons and particle beam propagation.

### ***Lasers***

A laser is an intense beam of visible or invisible electromagnetic radiation aimed by a device. We currently use lasers to designate targets for some of our terminally guided munitions. In the future, we still will use lasers for designation; however, we won't need to continuously lase a target to eliminate it. We'll designate a target and then switch the energy beam to other targets.



**In the 21st Century, space-based target acquisition systems will provide real-time targeting data to fire support weapon systems on the ground or in**



**Particle beam and laser weapons will produce multiple effects on the battlefield, including destroying sensors and incoming artillery and interrupting satellites.**

Smart munitions will be able to hit targets that have been lased for only a few seconds. Additionally, lasers will be able to identify targets that are camouflaged or screened by smoke.

We can use laser weapons to produce a number of personnel and equipment effects on the battlefield. Lasers could produce eye injuries, disrupt soldiers' performance and increase the Threat's need for protection. We could use them to attack the ocular sensors or observation capabilities of pilots, vehicle commanders, gunners and drivers. We will use lasers on several fire support systems as a self-defense weapon and have some soldiers carry them as their primary weapons. Lasers will be able to destroy single land mines and provide a countermeasure to Threat laser systems. Lasers will destroy sensors, disrupt precision guided missiles' ability to guide onto targets and interrupt satellites. Psychologically, lasers will disrupt command and control and the state-of-mind of Threat soldiers. Lasers will be able to damage aircraft through heating and melting.

Lasers also will provide the ability to communicate for short line-of-sight distances. Advantages to laser optical communication systems include secure transmission, jam and directed-energy resistance, extreme reliability and very high data rates.

### ***Radio Frequency***

**December 1987**

Radio frequency (RF) devices will sweep across areas to identify targets in an acquisition mode. Once we acquire the target and identify it as friend or foe, these devices will switch to an attack mode to neutralize the target.

We'll use RF radiation and microwave energy to produce physical effects on Threat soldiers and weapon systems. RF weapons will be in a form similar to that of conventional radar systems with an antenna to direct the energy. Audio clicking, caused by microwave energy, causes soldiers to lose their sense of direction. Other physical effects caused by RF and microwave energy include ocular lens transduction and disrupting thermal regulation. Thermal regulation is the body adjusting its temperature to the environment. RF energy would cause the body to react improperly, incapacitating the soldier.

Radio frequency weapons also will be able to disrupt or destroy electronic components in RPVs, radars and command and control systems. Effects caused will include instability in aircraft flight controls, interruptions in communications and garbled sensor data. These weapons have a broad beam and can cover large areas of the battlefield. Coordinating them is important to ensure we don't affect force operations. We can deliver friendly artillery projectiles that generate electromagnetic pulses (EMP), deep into the Threat's rear area to interrupt communications. We also can use RF warheads against assembly areas, airfields and command, control and communication complexes.

### ***Particle Beams***

Particle beam weapons will be able to produce catastrophic damage at short distances. Particle beam is a pulse of electrons, protons or atoms directed against a target by magnets. Generators are required to produce particle beam energy that may be used in air defense, military operations on urban terrain (MOUT), mine clearing and tactical crew incapacitation over a large area. We will use particle beams to counter incoming Threat artillery missiles. Secondary nuclear or X-ray damage can be produced within a target. Heat generated by particle beam weapons will melt insulation and destroy the electronics of a system.

## **Brilliant and Improved Smart Munitions**

Brilliant munitions will add a new dimension to the battlefield. Munitions

fired from cannons, rockets and missiles will be able to discriminate whether the target is friend or foe. Additionally, these munitions will communicate with other in-flight munitions to ensure one target is not attacked by two different munitions. Brilliant munitions will be in the form of rounds that need no further preparation at the firing unit than current or future conventional munitions. These brilliant munitions will negate the need for target designation by susceptible forward designation systems. They will select targets within a one to two kilometer area, maneuver to get within range and then attack to destroy the target.

Smart mines also will be prevalent on the battlefield. Technologies will allow some artillery-delivered mines to loiter in the air so the commander can reposition them to achieve the desired effects. Other scatterable mines will have sensors that will activate after they hit the ground. The sensors will be able to discriminate between friend or foe and communicate with other mines within the minefield to identify which targets they will attack. Mine communication with the local commander allows him to choose the targets.

## **Unmanned Aerial Vehicles**

Future technologies will enhance our ground launched acquisition systems. Future RPV or unmanned aerial vehicles (UAV) will make the most use of low-observable technologies and be less vulnerable to enemy action. These systems will provide the bulk of beyond-line-of-sight target data. RPVs and UAVs will continue to support the maneuver commander with targeting, meteorological and target damage assessment information.

The RPV and UAV of the future will be more than just sensor platforms. They will relay communications and have either munitions or a directed-energy device to attack a target of opportunity. Some of the RPV and UAV fleet may be of the expendable variety with a warhead on board. They may fly into a target after completing the intended intelligence or targeting missions.

## **Camouflage, Deception and Low-Observable Technology**

With the introduction of new and more lethal systems in the 21st Century,

technologies will help shield these systems from observation and acquisition. Low-observable and signature-reduction technologies will help disguise the systems the Threat has located, making high payoff targets more survivable. Improved camouflage techniques and materials will reduce thermal infrared signatures. Infrared retardants and chemical resistant paints will ease camouflage techniques, complementing automatic camouflage systems. On-board, quick-reaction, defensive smoke systems will instantly conceal Field Artillery systems, enhancing their movement. Radar-absorbing materials will decrease the capabilities of Threat acquisition systems. Generators and engines will be silent with thermal signatures reduced.

Deception devices will be prevalent on the battlefield. Devices will be available that portray all the signatures of a real fire support system. Decoys will be small, expendable robotic vehicles or dispensable devices from host vehicles that will tactically deploy as the real system. These systems will draw fires away from our real systems, enhancing their survivability. Additionally, computer-generated imagery will provide signatures to deceive Threat munitions, causing them to explode away from the true system. Low-observable technologies applied to munitions will help defeat radar acquisition.

## Composite Materials


Composite materials will be commonplace in the 21st Century. Nearly all aircraft, weapon systems and combat vehicles will incorporate some form of composites. Composites of plastics reinforced with high-strength fibers will replace metals in systems to reduce weight, increase strength, improve performance and allow systems to tolerate heat or recoil forces caused by weapon firing. Composites of metals will enhance the development of high-strength gun barrels that provide increased velocity, range, service life and survivability of future fire support systems. These materials will absorb radar energy, allowing for decreased signatures and providing laser countermeasures to defeat the directed-energy threat. Composite materials will support the development of robotic handling equipment. We will be able to manipulate the stronger, lighter robotic arms with increased speed and movement and with

less lubrication. The development of composite materials will enhance the reliability and performance of all Field Artillery systems.

## Summary

The fire support mission will not change in the 21st Century. However, the systems used to perform this mission will change as technology surges ahead. Our heavy systems will become lighter, smaller and more lethal. Further, our capability to strategically deploy forces around the world will improve dramatically. Heavy and

light units will merge into one universal force capable of responding to any situation within the conflict spectrum anywhere in the world. The Army laboratories and civilian industries are progressing at a phenomenal pace, providing technological advances in future weapons, target acquisition and command, control and communications systems.

But we can be certain that the future Threat force also will capitalize on technological advances. For this reason, we need to capture and methodically achieve all that technology has to offer. We owe this to the future generations of fire support practitioners. 



Robert Gartland

## 1988 History Writing Contest

The United States Field Artillery Association is having its third annual History Writing Contest with the winners' articles published in the History (August 1988) issue of *Field Artillery*. Send us your original, unpublished historical manuscript on Field Artillery in Combined Arms Operations. The Association will award three cash prizes for the best manuscripts: First Place—\$300, Second—\$150 and Third—\$50. At the discretion of the judges, a manuscript may receive Honorable Mention and be published in the History issue.

Military or civilian, Association member or not—anyone with an interest in the history of the King of Battle may compete. Just send the Field Artillery Association a manuscript not longer than 2,500 words, about 16 double-spaced typed pages, by 15 March 1988. You can write on any aspect of the history of Field Artillery in Combined Arms Operations you want; however, your thesis should include lessons learned that apply today.

A panel of three, well-known historians—an officer, noncommissioned officer and a civilian—will judge the manuscripts. The panel will use the following criteria:

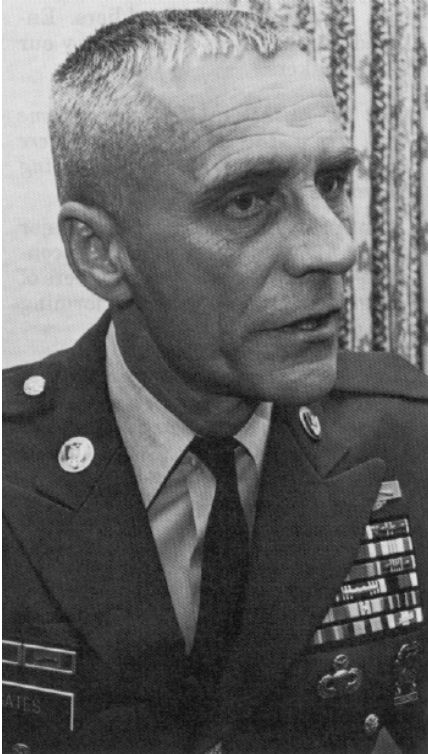
- Relevance to Field Artillery in Combined Arms Operations;
- Usefulness to today's Redlegs;
- Historical accuracy;
- Writing effectiveness — organization, construction and style; and
- Originality.

Your manuscript must reach the Field Artillery Association not later than 15 March 1988. The standards for *Field Artillery* articles outlined in this issue apply to your manuscript. Include your biography and supporting graphics (photographs, art, charts, graphs, maps, crests, etc.) with your manuscript and mail them to:

**The United States Field Artillery Association**  
**ATTN: History Writing Contest**  
**P.O. Box 33027**  
**Fort Sill, Oklahoma 73503-0027**



Sergeant Major of the Army Julius W. Gates



Photos By: Ron Ebsen

# NCOs: *Maintain the Momentum*

On 1 July 1987, Julius (Bill) William Gates was sworn in as the eighth Sergeant Major of the Army. The following interview with *Field Artillery* came two months later.

*As Sergeant Major of the Army, (SMA) do you have specific goals you'd like to accomplish or programs you'd like to start?*

Up front, let me say that we have a great Army. We have the best soldiers, the best leadership and the best equipment of any Army in the world. Our challenge is to maintain the momentum and make an even greater Army.

Looking down the road, I am concerned about the future of our noncommissioned officer corps. How do we maintain the momentum of NCO leadership development? What do we want the NCO corps to be capable of, and what will the NCO corps look like at the turn of the 21st Century. Since our young NCOs attending the primary leadership development course today will be sergeants major at the turn of the 21st Century, we must do what we can to prepare them to meet those challenges through training.

In summary, if we can maintain our momentum and plan for the future to maximize the potential of our soldiers

and our equipment, then we will have an even greater Army at the turn of the Century and beyond.

*How do you compare the quality of our soldiers today to the quality 10 years ago?*

That's a difficult question—to compare great soldiers that were in our Army 10 years ago to the soldiers of today. Great soldiers of our past laid the foundations of our Army of today. I don't like to compare, but I will comment about the soldiers that make up our Army. We have statistics saying that the people entering the Army today are the best ever. More than 91 percent of our soldiers are high school graduates, and many have completed some college. Our soldiers complete enlistments at a higher rate. They make our Army more capable, because they can do their jobs with little supervision.

To get an appreciation for our troops, you have to see them at the work site, in the field and even off duty. They are the most energetic soldiers I have ever seen. We don't have a drug problem. We don't have a desertion problem. Our soldiers are trying hard to do what's right. If it sounds as though I'm bragging a bit about them, then you have the right message.

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**We have the best soldiers, the best leadership and the best equipment of any Army in the world.**

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**More than 91 percent of our soldiers are high school graduates, and many have completed some college.**



**Being an NCO in our Army of Excellence is not an easy job; it calls for full-time leadership and dedication.**

**The noncommissioned officers voiced their opinion that we needed a new evaluation report.**

*What do you see as the greatest challenge our NCO corps faces today?*

The way I see it, we have four challenges. These challenges are important for every noncommissioned officer in our Army. First, we must recruit high-quality men and women not only through the recruiting command, but also through our personal contact in hometown U.S.A. and through the positive attitudes of our soldiers who leave our Army.

After we enlist high-quality soldiers, we must maximize their potential through tough, realistic training to develop war-fighting skills; then we must sustain those skills through continuous training. We must do everything possible to take care of soldiers and their families. This could mean additional training, a pat on the back or a kick in the rear, when needed.

Third, we must keep our high-quality people as members of the active Army. But if a soldier decides to leave the active force, then we want to encourage him or her to remain as a member of our team by joining the National Guard or Army Reserve. Lastly, we NCOs must know our stuff. We must know our people, our equipment and our jobs.

Given the quality of our troopers, our equipment, the responsibilities and the authority invested in us, we must meet and enforce the established standards. We must insist our troops meet and maintain the standards and help them in doing it. Being an NCO in our Army of Excellence is not an easy job; it calls for full-time leadership and dedication.

*When you visit units and installations, what will you be looking for in the soldiers there?*

To hear and listen to the soldiers. To make personal contact with our soldiers and their families to see how our Army policies affect them. We have many areas of concern: leader development programs, morale recreation and welfare programs and training exchange facilities to name a few.

*What role do you, as the SMA, play in setting Army-wide policies?*

We have good DA [Department of the Army] policies. Before any DA policy takes effect, many hours of hard work and coordination are spent. In all cases, the effect on soldiers and families is considered. Some of our policies don't

please everyone; however, I'm satisfied the policy makers do what is right for the benefit of our Army and our soldiers. To answer your question, I am a member of almost every policy-making board or council that involves enlisted soldiers. Enlisted soldier voices are heard by our policy makers.

*Just before this interview, you came back from the U.S. Senate. Were you there in some kind of advising capacity?*

One of my duties as Sergeant Major of the Army is to represent the concerns of all soldiers to the members of Congress. Today, I was performing that duty for the first time.

*With the officer reductions going on Army-wide, notably the recent elimination of several warrant officer MOSs, how does the NCO, whose "plate is already full," meet the challenge of the sudden added technical and leadership responsibilities?*

We don't need any warrant or commissioned officer cuts. We have a fairly well-balanced Army, and we need to maintain that balance.

Given the caliber of NCOs and young soldiers, we can increase the responsibilities and authority of our NCOs. We have done so over the years, and our sergeants have responded very well. One of the things that makes our Army great is we train and plan for all of our soldiers to be leaders. When the time comes, whether at peace or at war, the American soldier has and will rise to the occasion.

*Our Army is scheduled to start submitting the new NCO evaluation report (NCO-ER) in 1988. Why did we need this new evaluation report?*

The need for the report came out of the Noncommissioned Officer Development Study [1985]. The noncommissioned officers voiced their opinion that we needed a new evaluation report.

*Sergeant Major, what was the feedback from the NCOs that called for the NCO-ER?*

They strongly believed the present EER was inflated and did not portray a realistic picture of their capabilities and potential. Another stated drawback to the present report was the lack of counseling. I believe the new NCO evaluation report will satisfy those concerns. [The new NCO-ER requires raters document counseling sessions.]



*The new form eliminates numerical counts. It also replaces the performance narrative with short sentence fragments or "bullets," so to speak. The bullets only are required when a soldier is rated at the top or the bottom. In the active Army Field Artillery alone, we have more than 17,000 NCOs. With so many soldiers, how will the promotion and selection boards quantify soldiers' performance for comparison?*

Promotions are based on the whole person concept. A soldier's ability to compete for promotion was never in the past, isn't today, nor will it ever be based [solely] on a written report.

Certainly, the evaluation report plays a critical role, but there are many other areas considered by the promotion board members. SQT scores, appearance of the soldier—based on the DA photo—experience, variety of assignments, difficult leader assignments, the disciplinary record, awards and decorations, physical fitness, NCOES attendance, academic reports, are all areas other than the evaluation report the promotion board considers to determine promotion eligibility.

*The Army is moving toward linking more schools in the NCO educational system (NCOES) to promotions. [The NCOES includes the primary leadership development course, basic and advanced NCO courses and the Sergeants Major Academy.] Do you think that's a good move? Which of those schools do you think should be linked to promotions?*

Yes, I do think it's a good move, and I think it's something long overdue. I think all the NCOES Schools should be linked. We are moving in that direction. Our caution at this stage is not to move too fast and to ensure we can facilitate the linkage by providing enough training seats for our soldiers.

*How has the role of the female NCO changed in the past 10 years?*

The role of the female has evolved into the same role as that of the male noncommissioned officer. We have female command sergeants major; we have females who are commandants of NCO academies. We have a female who is the command sergeant major of the 1st Personnel Command in Germany. This year, for the first time, a female command sergeant major was considered for selection as Sergeant Major of the Army. As the number of female soldiers increases, so will their roles.

*So, you're saying they are competitive with their male counterparts for promotion? Are the percentages the same for selections?*

We are not there yet. But we're moving in that direction very rapidly.

*What can the female NCO do to make herself more competitive or get a bigger piece of the percentage?*

There are two things. One is to take advantage of the opportunities, seek tough assignments and training opportunities. But probably the most important thing is to be technically and tactically proficient and then gain the confidence and trust of her soldiers.

*With an increasing number of our enlisted soldiers married to each other and given the demands of unit missions, how do we best care for these Army families?*

Army families are of prime concern to the Army leadership. Recently the Army Married Couples Program was established. We still have some kinks in it, but overall, it is a good program that allows Army families to be stationed together, when feasible.

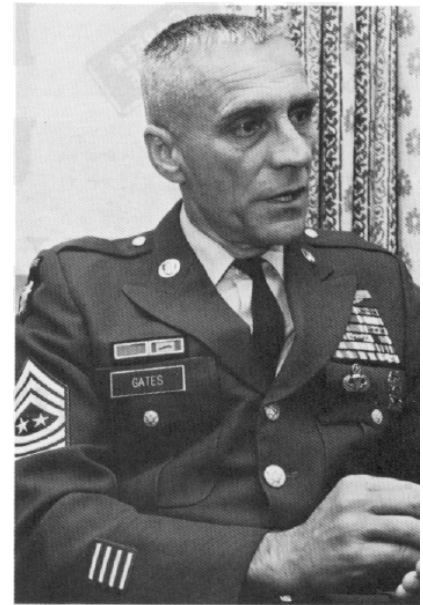
We have established child care centers in recognition of the need to help our Army married couples. We don't claim to have all the answers, but the Army leadership is concerned about our Army families.

*What advice can you give ambitious, young NCOs who aspire to the most senior NCO positions?*

There are two bits of advice I would give and have given quite often. The most important is to remember who you are, who you represent and where you came from. And the other bit is to be competent in the field you have chosen. You've got to study and you've got to restudy. You've got to spend time with your soldiers and equipment so you know more about those soldiers and that equipment than anyone else. Being a leader is not an easy job. No one has ever said that it was; however, a good Army leader will receive rewards that are envied by many.

*What single message would you like to send to artillerymen around the world?*

I would like to thank Field Artillerymen for their selfless service to our Army and our country, to challenge them to continue to maintain the momentum of being the great soldiers they are.



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**Promotions are based on the whole person concept.**

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**I think all the NCOES schools should be linked. We are moving in that direction.**

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SMA Gates entered the Army in 1958 and served three tours in Germany, two combat tours in Vietnam and a tour in Korea. He was Command Sergeant Major of the Second Armored Division (Forward), the Third Infantry Division (Mechanized), the US Army Sergeants Major Academy and US Forces Korea and Eighth Army. He is airborne, jumpmaster and ranger qualified and was the first American NCO to attend the British Army's Tactics Course. His many decorations include the Legion of Merit, four Bronze Star Medals for valor and the Purple Heart. SMA Gates is married and has two daughters.



# Redlegs' Career Update: Officers, Warrant Officers and Noncommissioned Officers

As members of the second largest branch in the Army and implementers of the most destructive force on the battlefield, Field Artillery personnel dramatically affect the mission of the entire US Army. Of the 781,000 soldiers in the Active Army, the Field Artillery Branch comprises about 50,000 of them or 6.4 percent. Of these Field Artillery soldiers, 9,000 are officers, 260 are warrant officers (WO), and 17,000 are noncommissioned officers (NCO). How the Army promotes and selects these soldiers each year impacts on Field Artillery's ability to accomplish its mission for years to come.

This article gives a brief overview of career progression for Field Artillery soldiers in the three rank structures. Though the overview of the NCO ranks is very general, *Field Artillery* will follow up with a three-part series of comprehensive career guides for the cannon, missile and rocket, and target acquisition military occupational specialties (MOS), beginning with the February issue.

This article also compares Field Artillery soldiers to Army-wide soldiers of the same rank at various career "check points." It discusses important changes to the ranks such as the requirement for an officer to serve in a joint assignment as a prerequisite for promotion to general officer, the restructuring

of the warrant officer corps and the elimination of one warrant officer artillery MOS and the implementation of the new NCO evaluation report (NCO-ER).

## Officers' Update

The officer personnel management system (OPMS) is the Army's program for matching the best available officer to an assignment, while meeting the professional development needs of the officer corps. This section summarizes some far-reaching changes that affect OPMS-managed officers.

## Promotions

Because the Army contracts and expands over time, promotion policies change from year to year. Certainly there are no guarantees, but the Defense Officer Personnel Management Act (DOPMA) establishes time-in-service and selection-rate guidance for promotions. DOPMA sets long-term goals for promotions and realistic targets for each year.

Below-the-zone promotions allow for the accelerated promotion of officers who have demonstrated performance and potential far superior to that of their peers. These selections apply only to major, lieutenant colonel and colonel promotions. DOPMA authorizes a maximum of five percent below-the-zone promotions to major and 10 percent



	Goal	Current	Target
COL	22 ± 1	22 yr, 7 mo	22 yr, 4 mo
LTC	16 ± 1	17 yr, 3 mo	17 yr, 4 mo
MAJ	10 ± 1	11 yr, 1 mo	11 yr, 1 mo
CPT	3 yr, 6 mo (min)	4 yr	4 yr

## DOPMA Promotion Pin-On Points

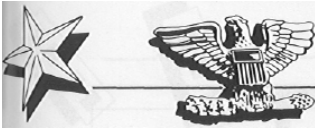
to the grades of lieutenant colonel and colonel.

Field Artillery officer promotion rates historically have been higher than the Army averages. Although for the first time in recent years, our promotion rates at the ranks of captain and lieutenant colonel have fallen below the Army average. There is no

reason to believe this trend will continue.

## Force Alignment Plan (FAP) III

The Force Alignment Plan (FAP) III is the process to fill the foxholes and realign the force to meet the Army's needs. The Army's largest requirement for lieutenants is



in the combat arms. By the time these lieutenants become captains, there are more captains than combat arms jobs for them to fill. Alternately, the combat support and combat service support branches are unable to fill their captain and field-grade officer authorizations because their lieutenant accession base is too small.

To realign the force, some other than regular army (OTRA) officers, particularly in the combat arms, are rebranched into combat support or combat service support branches. This is done in conjunction with the conditional voluntary indefinite (CVI) process. A CVI board meets concurrently with the captain promotion board. The actual rebranching takes place after the officer has been selected for promotion and CVI. If the officer is rebranched into a combat service or combat service support branch, he attends that branch officer advanced course. His next duty assignment is in his new branch.

The Field Artillery has, to date, rebranched fewer officers than most other "donor" branches. During the 1987 rebranching board, only 31 out of a possible 197 Redleg officers were rebranched. Of those 31 officers, 28 volunteered for branch transfers. Rebranching will continue through 1991 when the branch detail system will replace the current process.

Branch detailing differs somewhat from the current rebranching process. Under it, cadets or candidates in all pre-commissioning programs will be able to volunteer for branch detail before commissioning. During annual accession branching, these individuals will receive a control and a detail branch. After coming on active duty, officers will attend the basic course of their detail branch, serve a utilization tour (usually three years) and then return to their control branch advanced course. Branch detailing will eliminate the disappointment that can occur with involuntary rebranching.

### Branch Qualification and Command Opportunities

According to Army regulations (AR 611-201), a Field Artillery officer must achieve the following milestones before he is branch qualified:

- Complete the officers basic and advanced courses and the combined arms services staff school.
- Serve in a Field Artillery delivery system unit.
- Serve three years with troops at the battery or battalion level.
- Complete an overseas tour.
- Successfully command a table of organization and equipment (TOE) or table of distribution and allowances (TDA) unit, usually for a minimum of 12 months.

Successful command is the key to branch qualification. In most cases, a company grade officer has but one opportunity to command. Because of the number of commands available each year, there is a seven-year window for captains in a year



group to command for one and one-half years. The seven years of eligibility parallels the officer's time-in-grade as a captain. Branch's goal is to have 100 percent of the company grade officers command within that period.

Of the 637 company grade officer commands, 74 are open to women. Currently Field Artillery has 168 female officers, including 81

lieutenants, 85 captains and 2 majors.

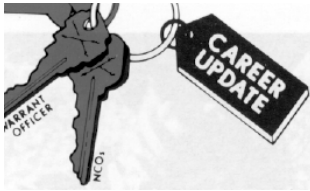
Naturally, field grade artillerymen have considerably less opportunity for command, based on a fewer number of available commands and shorter times-in-grade. Approximately 28 percent of the lieutenant colonels and only 17 percent of the colonels can expect to command during their years of eligibility.

Grade	03	04	05	06
TOE				
LANCE Svc Btry	8			
PERSHING				
• HHB, Cmd		1		
• Bn			4	
• HHS, Bn	4			
• Firing Btry	4	12		
FA Whd Dets	17	2		
HHB, Corps Arty	4			
TDA	37		10	2
<b>Total</b>	<b>74</b>	<b>15</b>	<b>14</b>	<b>2</b>

### Command Assignments Open to Women

Total Commands	Average Length	Commands Available Per Yr	Average Population	Commands Available Per Yr	Number of Yrs Eligible
637	+ 1.5	= 425	2991	÷ 425	= 7

### Captain Commands



## Functional Areas

When officers are commissioned, they are simultaneously designated a basic branch for entry on active duty, training and utilization. After seven years of active federal commissioned service (AFCS), all officers can select a career pattern and state a preference for a functional area. Officers who dual track in a branch and functional area designate their functional area. Some dual-tracked officers may later decide to single track in their functional area. The officer then only receives training and development in skills related to his or her functional area.

Officers receive functional areas based on the branch's needs as well as the officers' qualifications and preferences. Those with special qualifications identified on entry to active duty or gained through assignments and training may have their functional areas designated before their seventh year. Early designation also may occur as the result of graduate school training.

## Joint Duty Assignments

In the future, the Army will increase its emphasis on the joint duty assignments for field grade officers. Title IV, Joint Officer Personnel Policy prescribes joint duty experience as prerequisite for promotion to general officer. Title IV defines a joint duty assignment as:

*An activity in the integrated employment of land, sea and air forces of at least two of the four armed services. It includes, but is not limited to, matters relating to national military strategy, joint doctrine or policy, strategic planning, contingency planning and command and control of*

Functional Area	Title	Number to be Designated
18	Special Ops	5/1.0%
41	Personnel Programs Management Staff	72/15.1%
45	Comptroller	3/0.7%
46	Public Affairs	3/0.7%
48	Foreign Affairs	10/2.0%
49	Operations Research System Analysis	32/6.7%
50	Force Development	18/3.7%
51	Research and Development	94/19.7%
52	Nuclear Weapons	43/9.0%
53	Systems Automation	10/2.0%
54	Operations, Plans and Training	163/34.1%
97	Contracting and Industrial Management	2/0.2%
99	Combat Developments	24/5.0%

*\*Based on branch and functional area authorizations in TOE and TDA organizations and the 479 Field Artillery officers in year group 1981.*

## Year Group 1981: Officers' Functional Areas\*

*combat operations under a unified command. Assignments within an officer's own military department are excluded by law as are assignments during joint training.*

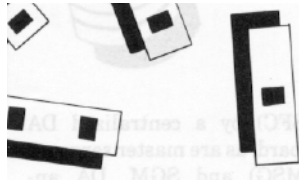
Congress mandated the Secretary of Defense implement Title IV no later than two years after it becomes law. Further, he must identify joint duty positions no later than six months after its enactment. The Secretary of Defense is currently reviewing the list of positions qualifying for joint duty.

## The Total Warrant Officer System

For the 15,330 active duty warrant officers in 77 different MOSs, the total warrant officer system (TWOS) is a requirements-based system covering careers from recruitment and appointment through retirement or separation. The Total Warrant Officer Study approved by the Chief of Staff of the Army (CSA) in June 1985 had four major revisions:

- New definition of warrant officer (WO).
- Classification of WO requirements by rank.





- Revision of WO career management.
- Staffing of a legislative package creating the rank of CW5 (master warrant officer), establishing a single promotion system to replace the current dual system and permitting selective retirement to control the size of the force.

### Warrant Officer Definition

In June 1985, the CSA approved a new definition of a WO that describes tactical as well as technical responsibilities. The definition is in the current edition of AR 611-112 and will be included in other documents as revised.

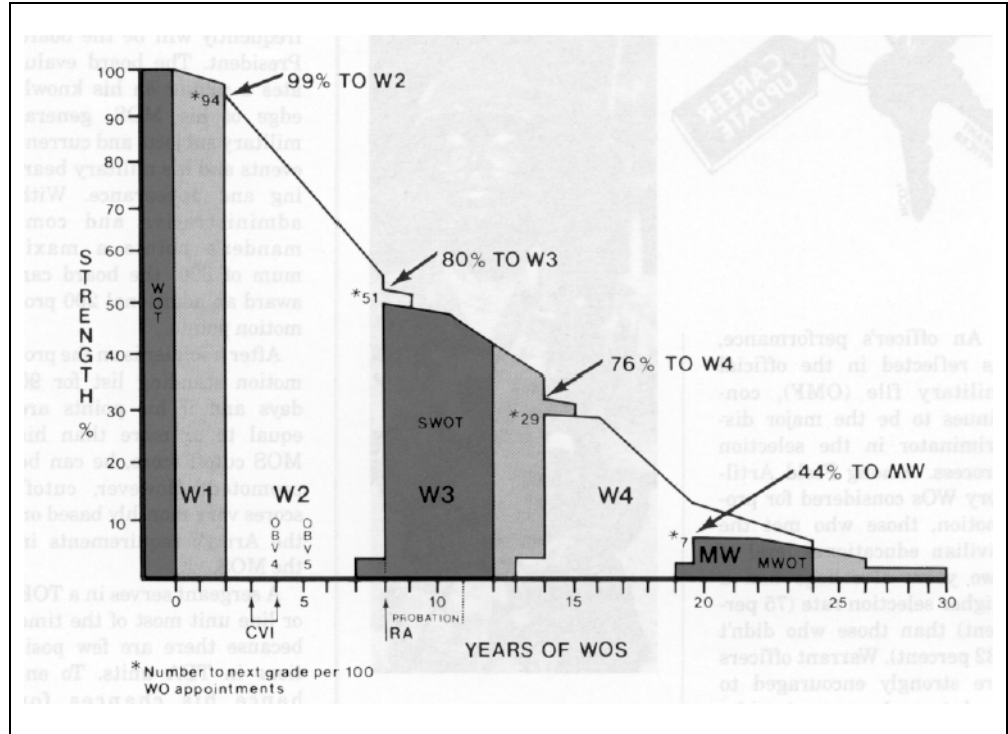
### Classification of Warrant Officers by Rank

The process of identifying WO requirements by rank began in early 1986 and culminated with CSA approval of a Department of the Army (DA) recommended rank structure in February 1987. Changes caused by recent officer and WO reductions are currently being refined to ensure the Field Artillery structure is consistent with DA goals.

The Total Army Personnel Agency (TAPA), the new name for MILPERCEN, will begin making TOE and TDA assignments by rank in early 1988 with report dates beginning in October.

### Revision of Warrant Officer Career Management

This change involves management by years of warrant



**Total Warrant Officer System Career Plan**

officer service (WOS) rather than by active federal service (AFS). The TWOS implementation group is currently briefing the Army Staff (ARSTAFF) on the internal DA policy changes necessary to implement the program. The policies reset the personnel management "clock" at zero when a WO is appointed, allowing for a full 30-year career. RA integration is an integral part of the 30-year WO career. The last RA integration board will meet in 1988. After the board adjourns, RA integration will be automatic upon promotion to W3.

### Staffing the Legislative Package

The TWOS legislative package currently is being staffed with the other military

services and within DA. Any legislative process can be slow; therefore, artillerymen should not expect a resolution of this TWOS initiative in the near future. The master warrant officer training (MWOT) course being developed by TRADOC will start tentatively the latter part of fiscal year 1988.

### Meteorology Technician MOS Elimination

Field Artillery MOS 201A, Meteorology Technician, is one of 11 Army warrant officer MOS being eliminated by the CSA's 14 May 1987 decision. TAPA, in conjunction with the respective proponents, is developing a transition strategy to accomplish an orderly elimination of the WO MOS affected by this decision.

Field Artillery Branch of TAPA will soon be sending letters to WOs in MOS 201A addressing the options available to them. The warrant officers will have to respond with their preferred option by a predetermined date. Those WOs who elect not to retire or are not eligible to retire by 30 September 1991 must reclassify. Reclassifications will be

completed by 30 September 1991.

The Field Artillery School recently submitted a proposal through TRADOC that would retain a limited number of 201As in the inventory past 1991. If approved, this proposal would help Field Artillery make the transition to the meteorological data system (MDS) and light artillery meteorological system (LAMS). Pending resolution of the proposal, the personnel and reclassification actions will continue as mandated by the CSA.

### 1987 Warrant Officer Promotions

The 1987 promotion list for CW3 and CW4, Army of the United States (AUS), had a lower number of selections for both grades than in previous years and established ceilings for most WO MOSs as directed by DA. Compared to the Army average, Field Artillery WOs fared reasonably well in selection to CW4. However, for the first time in three years, the CW3 selection was below the Army average. The selection rate to CW3 for Field Artillery was 43 percent compared to the Army average of 55 percent.

	Field Artillery	Army-wide
Master Warrant Officer	3.3%	3.4%
Senior Warrant Officer	35.8%	38.1%
Warrant Officer	60.9%	58.5%

**Rank Structure of Warrant Officers: Field Artillery Compared to Army-wide**



An officer's performance, as reflected in the official military file (OMF), continues to be the major discriminator in the selection process. Among Field Artillery WOs considered for promotion, those who met the civilian educational level of two years of college had a higher selection rate (75 percent) than those who didn't (32 percent). Warrant officers are strongly encouraged to work toward an associate degree to improve their chances for promotion. To prepare for next year's AUS promotion board, Field Artillery WOs need to ensure their OMFs are current, complete and substantially represent their potential to perform in the next higher grade.

### NCOs: Sergeant to Sergeant Major

A Field Artillery enlisted soldier who wants to reach the rank of sergeant major (SGM) must begin preparing very early in his career. To succeed, he must be deeply committed to the Army and be willing to subordinate his personal wishes for the good of his units. This commitment means a soldier performs whatever duties assigned to him to the best of his abilities.

First and throughout his career, a soldier must attain and maintain military occupational specialty (MOS) proficiency measured by the skill qualification test (SQT). The SQT affects his selection for promotion, schools and assignments until his retirement or separation.

As he maintains his proficiency, he climbs through the NCO educational system (NCOES), attending courses that prepare him for the next higher grade. The Army has



linked the NCOES to promotions except for the basic NCO course (BNCOC), and it plans to include BNCOC when resources are available. Even the US Army Sergeants Major Academy (USASMA) is required before appointment as command sergeant major (CSM).

### Promotion to Staff Sergeant

As a specialist four (SP4) or sergeant (SGT), he must attend the primary leadership development course (PLDC) before getting on the staff sergeant (SSG) recommended list. He also attends BNCOC as a SGT (or junior SSG, if already promoted). Both courses are worth 30 points on his promotion worksheet for SSG.

This worksheet is key to his promotion. On the sheet, he must have his supervisor and commander's recommendations and his administrative points (SQT, awards, PLDC, civilian education, time-in-service, and time-in-grade) listed by the personnel action center (PAC) before he can appear before the promotion board.

The board consists of at least three voting members and a nonvoting recorder. His battalion command sergeant major or a field grade officer

frequently will be the board President. The board evaluates a soldier on his knowledge of his MOS, general military subjects and current events and his military bearing and appearance. With administrative and commander's points a maximum of 800, the board can award an additional 200 promotion points.

After a soldier is on the promotion standing list for 90 days and if his points are equal to or more than his MOS cutoff score, he can be promoted. However, cutoff scores vary monthly based on the Army's requirements in the MOS.

A sergeant serves in a TOE or line unit most of the time because there are few positions in TDA units. To enhance his chances for promotion, he should pursue civilian education to meet the Army's goal of an associate degree by his 15th year of service.

A staff sergeant probably will serve as a drill sergeant, recruiter or service school instructor. Promotion boards consider these assignments positively as long as they aren't repetitive, giving the appearance a soldier is hiding from the "muddy boots" Army.

### Promotion to Sergeant First Class

A staff sergeant is promoted to sergeant first class

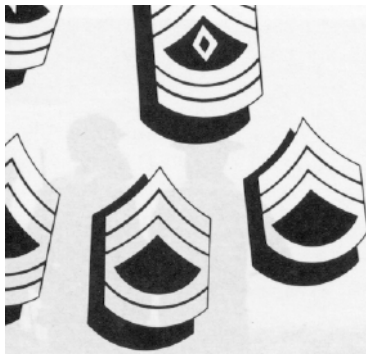


(SFC) by a centralized DA board, as are master sergeant (MSG) and SGM. DA announces primary and secondary zones of consideration, and a board evaluates records that meet the time-in-grade and time-in-service criteria. The important change in the process is that the board only evaluates the soldier's official military personnel file (OMPF) instead of his physically appearing before the board.

To ensure his OMPF records are accurate and complete and his photograph is sharp and up-to-date, a soldier should request a copy of his microfiche about six months before the promotion board meets. He is the only one who can request it by writing: Enlisted Record Center, Fort Benjamin Harrison, Indiana 46216. He should also ask his first sergeant (1SG) or CSM to help him check his microfiche and photograph before the promotion board convenes.

The board meets at Fort Benjamin Harrison for about six weeks and consists of a senior Field Artillery officer (usually a colonel or brigadier general) and senior enlisted artillerymen (MSG, SGM or CSM). It follows DA guidance as to the number of soldiers to select in the zones for each



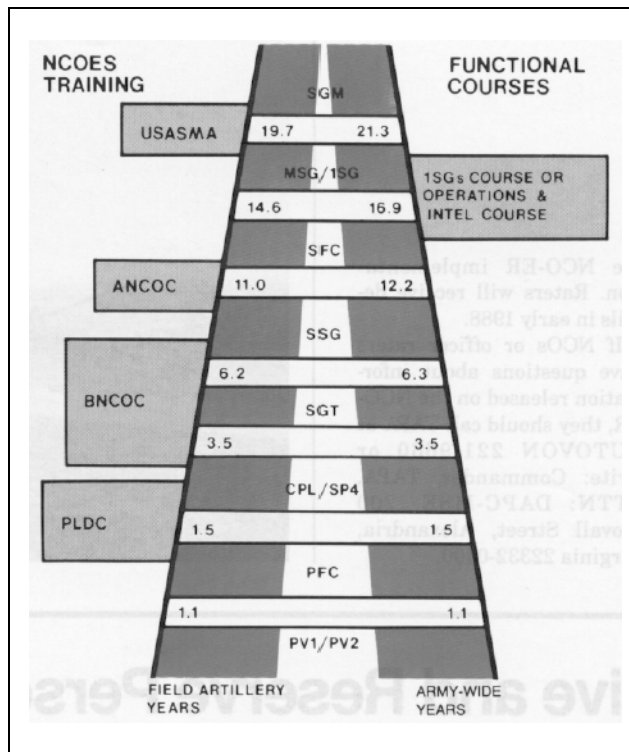


MOS, based on vacancies in the MOS. Once selected, a soldier receives a promotion sequence number according to his time-in-service and time-in-grade.

A sergeant first class must serve in a line unit if he expects to continue to advance in the Army. As a platoon sergeant, he is the training expert for his commander, responsible for ensuring his sections are fully mission capable. He is also one of the 1SG's primary assistants and involved in the NCO development program. He could serve in challenging TDA jobs such as drill sergeant, instructor or reserve component or reserve officer training course (ROTC) duty. As a senior SFC or MSG, a soldier could attend one of the functional courses of the USASMA or the operations and intelligence course.

### Promotion to Master Sergeant and Sergeant Major

A soldier must attend the advanced NCO course (ANCOC)



**NCOs' Ladder to Success: FA Average Years for Promotion Compared to Army-wide Average**

for his MOS before consideration for promotion to MSG. A DA board selects him for ANCOC in conjunction with the sergeant first class (SFC) promotion board. Fort Sill is currently converting the Field Artillery ANCOC to a live-in course as facilities become available.

Promotion to MSG is through the same process as promotion to SFC. The importance of checking the OMPF

and photograph before the centralized promotion board meets cannot be over emphasized.

A master sergeant may serve in the challenging position of 1SG. Comments from SGM and CSM boards cite successful tours as 1SG as the primary reason for selection. A master sergeant may also serve as battalion operations or intelligence sergeant or in TDA assignments previously

mentioned. If a soldier performs in a truly outstanding manner as a MSG or 1SG, he may be selected for SGM and CSM.

The climb to SGM or CSM is a demanding one. The soldier who stays proficient in his MOS, pursues military and civilian education and is a caring, dedicated leader will have the best chance of success.

### The New NCO Evaluation Report

The Army has totally revised the 1981 enlisted evaluation reporting system for noncommissioned officers. The transition to the new NCO evaluation report (NCO-ER) will occur in 1988.

### Changes

The NCO-ER differs in several important ways from the present enlisted evaluation report (EER). It will eliminate numerical scores. Values and NCO responsibilities will be rated as "yes" or "no." If an NCO is particularly strong or needs improvement, comments are mandatory in "bullet format"—one liners. The NCO also will be rated on MOS competency, physical fitness and military bearing, leadership, training and responsibility and accountability. These areas will be rated as "excellent," "success," or "needs improvement, some or much." The average rating should be "success" with any other rating requiring bullet comments. The soldier also will be rated on his overall potential.

The role of the senior rater and the documentation of performance counseling are two other major changes. The senior rater will address only overall performance and potential for promotion. He must support his ratings with bullet comments. Second, the rater must document counseling sessions, starting with face-to-face performance counseling within the first 30 days of each rating period. At least quarterly thereafter, the rater must counsel all NCOs—corporal (CPL) through

Rank Attending	Course	Description
SP4 or SGT	PLDC	Non-MOS specific, first-line supervisor training.
SGT or Junior SSG	BNCOC	Skill level 3 technical and leadership/management training.
SFC	ANCOC	Platoon sergeant (or equivalent) MOS and USASMA common core training.
MSG and 1SG	USASMA	SGM and CSM leadership and management training.

### NCO Educational System

CSM. A counseling check list is mandatory for CPL through SFC.

TAPA was to phase in the NCO-ER in early 1988, starting with a three-month counseling period for all NCOs before rating them on the new form. To allow raters more time for counseling and for them to become familiar with the form, TAPA has slowed

the NCO-ER implementation. Raters will receive details in early 1988.

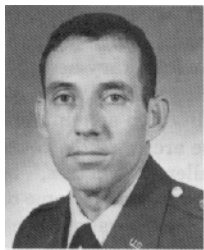
If NCOs or officer raters have questions about information released on the NCO-ER, they should call TAPA at AUTOVON 221-9660 or write: Commander, TAPA, ATTN: DAPC-MSE, 200 Stovall Street, Alexandria, Virginia 22332-0400.



# US Army Active and Reserve Personnel Assignments

## Field Artillery Officer Branch Teams

### Active Army Officers



COL Harry R. Yarger  
Field Artillery Branch Chief



LTC Jack G. Wolf  
Officer Team Chief



LTC Leo J. Baxter  
Colonel Assignments



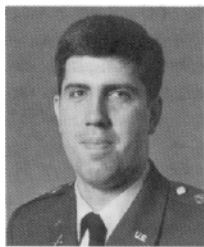
MAJ Stephen C. Randolph  
Lieutenant Colonel Assignments



MAJ Arnold Smith  
Major Assignments



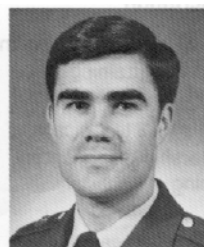
MAJ Stover S. James  
Captain Assignments:  
Functional Area/Nominative



MAJ David C. Cutler  
Captain Assignments:  
Troop/Advanced Course Follow-On Assignments



CPT Ann L. Horner  
Lieutenant Assignments:  
Accessions



CPT Thomas W. Weafer  
Lieutenant Assignments/Officer Advanced Course/Lieutenant Colonel Precommand Course



CW3 George B. Chiassion  
Warrant Officer Assignments

Fort Sill Representative for officers basic and advanced courses follow-on assignments is MAJ Buddy G. Rawls, AUTOVON 639-5206/6273.

An officer may request his performance fiche, service fiche and officer record brief (ORB). The Field Artillery Branch is responsible for an official file review during a Total Army Personnel Agency (TAPA) visit. An officer may visit his assignments officer and review his



official military personnel file (OMPF) in one stop; however, he should notify the assignments officer at least 72 hours

before the visit, so the assignments officer will have the OMPF available.

### Mailing Address and Telephone

#### Lieutenant Colonels and Below

Commander, TAPA  
ATTN: DAPC-FA-O  
2461 Eisenhower Avenue  
Alexandria, VA 22331-0460

Telephone: AUTOVON  
221-0187/0116/7817/0118  
Commercial (202)  
325-0187/0116/7817/0118

#### Lieutenant Colonels(P) and Colonels

Commander, TAPA  
ATTN: DAPC-OPC  
200 Stovall Street  
Alexandria, VA 22332-0400

Telephone: AUTOVON 221-7862/7863  
Commercial (202)  
325-7862/7863

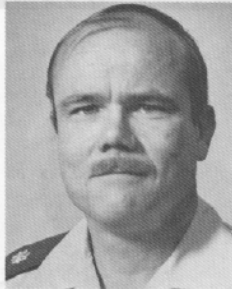
#### Officers' Microfiche Records

Commander, TAPA  
ATTN: DAPC-MSR-S  
200 Stovall Street  
Alexandria, VA 22332-0460

## Army Reserve Officers



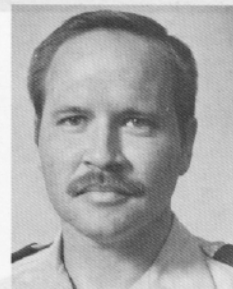
LTC Joe Rogers Field  
Artillery Branch Chief  
Lieutenant Colonels



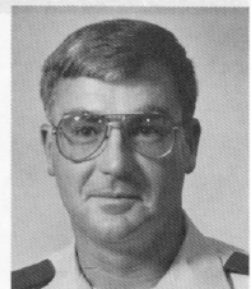
MAJ Timothy R. McLaughlin, Jr.  
Majors



MAJ Harry E. Ackroyd  
Captains with last SSN  
digits of 00-49



CPT Danny D. Henson  
Captains with last SSN  
digits of 50-99



MAJ Edward C. Baldwin, Jr.  
Lieutenants

Personnel management officers manage the Reserve forces to provide trained soldiers for mobilization. This includes coordinating assignments, mobilization training, professional development, promotions and strength projections and providing assistance to Reserve forces and active duty personnel making the transition to the Reserves.

### Mailing address

Commander, ARPERCEN  
ATTN: DARP-OPC-FA  
9700 Page Boulevard  
St. Louis, MO 63132-5200

Telephone: AUTOVON 693-7871/7873/7351  
Commercial  
(314)263-7871/7873/7351  
Toll Free 1-800-325-4950

TAPA was to phase in the NCO-ER in early 1988, starting with a three-month counseling period for all NCOs before rating them on the new form. To allow raters more time for counseling and for them to become familiar with the form, TAPA has slowed the NCO-ER implementation. Raters will receive details in early 1988.

## Field Artillery Enlisted Branch Teams

### Active Army Enlisted



SGM Gordon D. Pauly  
Chief Enlisted Team



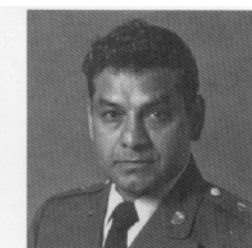
MSG Robert L. Cooper  
13Z, E-7 13B



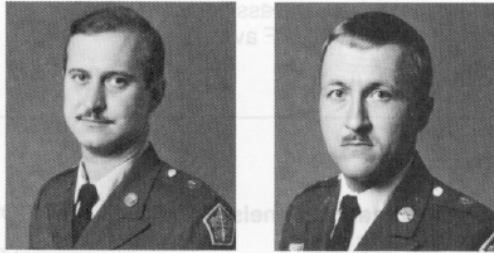
SFC Henry L. Brown  
13N, 13M, 15J, 82C,  
93F



SFC David K. Nichols E-6  
and below—13B, 13C,  
13E, 13F/Drill SGT Duty



SFC Moneshwar C. Darsan  
Reclassification



SFC Samuel H. Powell  
ADP Systems

SFC Dennis P. Gano  
15E/Recruiting Duty

The Field Artillery Branch Enlisted Team confirms the eligibility and qualifications of each soldier for reassignment against valid requirements. The team is

responsible for the professional development of enlisted soldiers and their assignments and training. Enlisted soldiers may confer with their career development NCOs by calling or visiting TAPA any duty day. However, official military personnel files are at Fort Benjamin Harrison, Indiana.

**Mailing Address:**

Commander, TAPA  
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2461 Eisenhower Avenue  
Alexandria, VA 22331-0460  
Telephone: AUTOVON 221-0304  
Commercial (202) 325-0304

**Army Reserve Enlisted**



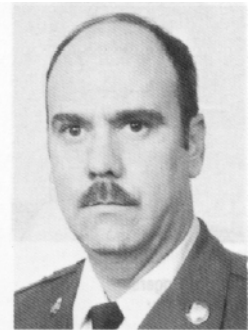
MSG James L. Lindsey  
Field Artillery/Air  
Defense Branch Chief



SSG John R. Fisher  
Assignments-Last SSN  
digits of 000-166



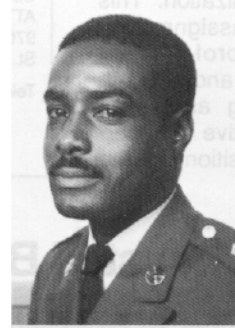
SFC Johan H. Kohler  
Training-Last SSN  
digits of 167-333



SFC George R. Varner  
Assignments-Last SSN  
digits of 334-500



SFC Richard D.  
Dorohovich  
Assignments-last SSN  
digits of 501-666



SFC Charles B. Nichols  
Training-Last SSN  
digits of 667-833



SSG Leroy Fluke  
Assignments-Last SSN  
digits of 834-999

Career advisers provide personnel management assistance to individual ready reserve (IRR) enlisted soldiers. They schedule training, coordinate individual mobilization augmentation (IMA) assignments and help the soldier get an assignment with a Reserve component unit.

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# Major Field Artillery Weapons and Support Systems

## Cannon

### M101A1

The M101A1 is a 105-mm, light towed howitzer that was used widely for direct support in the Korean and Vietnamese wars.

Today, only one active-duty battalion in Alaska and 21 battalions in reserve component units still have the M101A1. But the Marines have 24 per division for task organizing special artillery organizations. The M101A1 fires semifixed ammunition and has a range of 11,000 meters with conventional rounds or 14,500 meters with the rocket assisted projectile (RAP). The prime mover for the M101A1 is a 2½-ton



cargo truck. The howitzer is airliftable by CH47 helicopters and can fire all the 105-mm

ammunition in the inventory except the M760 extended-range cartridge.

### M102

The M102 105-mm, light towed howitzer provides direct support for the light infantry, airborne and air assault divisions. It fires semifixed ammunition with a maximum range of 11,500 meters for conventional rounds and 15,100 meters for RAP. The 3,171-pound howitzer can rotate full circle, providing 6,400 mils firing coverage. It can be airlifted by the CH47 and UH-60 helicopters, towed by a cargo truck or dropped by parachute.



### M109-HIP

The M109 155-mm, self-propelled howitzer provides the primary indirect fire support for the armor and mechanized infantry divisions,

and general support in Marine divisions. First fielded in the 1960s, the howitzer improvement program (HIP) is aggressively modernizing the fleet. The M109A2 is an improved version of the M109,

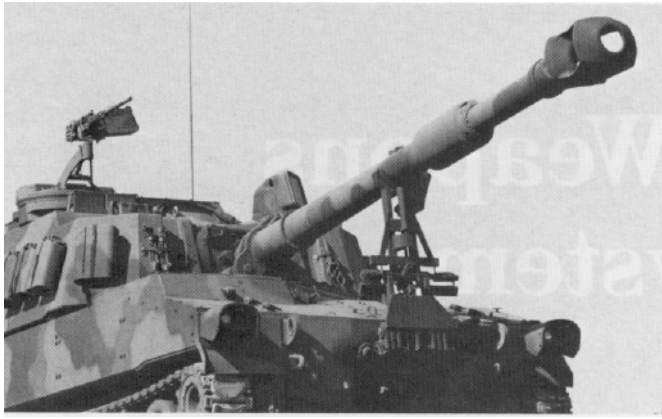
and the M109A3 is a depot-modified M109A1. The HIP improvements include:

#### *Survivability*

- Nuclear, biological and chemical (NBC) collective

protection and a microclimate conditioning system.

- Remotely operated travel lock.
- Modular azimuth positioning system (MAPS).
- Vulnerability reduction.



### **Responsiveness**

- Automatic fire control system.
- AN/VRC-89 single-channel, ground and airborne radio subsystem (SINCGARS) radio.
- Gun-drive servos.

### **Reliability, Availability, and Maintainability**

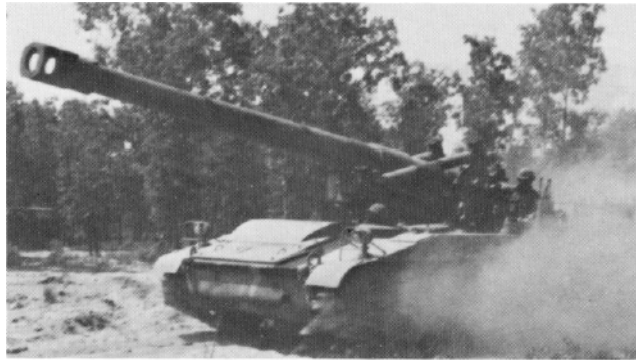
- Prognostic and diagnostic system.
- Upgraded hydraulic and electrical systems.
- Engine desert cooling package.

- M109A3E2 improved armament system.
- M109A3E3 advanced armament system.

### **Terminal Effects**

- Increased range.
- Compatibility with all 155-mm munitions.

The M109A3E2/E3 HIP howitzer fielding should begin in FY 89 and continue for four years. The HIP conversion of 1,700 M109A2/A3s involves all active force M109 battalions and selected National Guard units.



## **M110A2**

The M110A2, a 203-mm, heavy, self-propelled, 8-inch howitzer, is in the division and corps artilleries and provides general support and reinforcing fires. It fires separate-loading ammunition and has a maximum range of 22,900 meters (30KM with a RAP). The Marine Corps also uses the M110A2 for general support.

The Army has two product improvement programs (PIP) for the M110A2: mid-life PIP

(MLP) and crew ballistic shelter (CBS) PIP. The M110A2 MLP consists of 24 items that will improve reliability, availability and maintainability.

The CBS PIP consists of a removable aluminum-kevlar laminate ballistic shelter mounted on the rotating platform of the howitzer. The shelter will have through-the-roof fire control and an NBC-ventilated face piece system. The PIP also includes six low-risk improvements.



## **M114A1/A2**

The M114A1/A2, a 155-mm, medium towed howitzer, provides direct or general support for infantry divisions. Its prime mover is a 5-ton cargo truck. The howitzer is airliftable by CH47 helicopter and fires separate-loading ammunition with a maximum range of 14,600 meters. The main difference between the M114A1 and the M114A2 is the A2 has a one-in-20-twist

rifling versus the one-in-25 in the A1. This change made the M114A2 compatible with all the projectiles and the older family of propellants used in the M109 series howitzers. Today, M114A2 can shoot a RAP to a range of 19,300 meters.

The M114A1/A2 howitzers are only in reserve component units. The Marine Corps has nine, eight-gun M114A2 batteries.



## **M119**

The Army is currently buying 100 M119 105-mm, lightweight howitzers made by the United Kingdom. They will replace the M102 and M101A1 howitzers and also be issued to the light infantry divisions and other rapid deployment forces, starting in FY 89. The total requirement for the Army is 548.

The 4,100-pound M119 fires all conventional 105-mm ammunition, including the RAP and a dual-purpose improved conventional munition

round (DPICM) now under development.

An M119 can be carried by the UH60 helicopter, towed by a heavy, highly mobile multi-purpose wheeled vehicle (HMMWV) M1069 or parachuted from a C130 aircraft. The howitzer can be operational within 10 minutes after landing.

### M102/M119 Range\*

	Comparison (KM)		
	HE	HERAP	DPICM
M119	14.3	19.5	16.8
M102	11.5	15.1	—

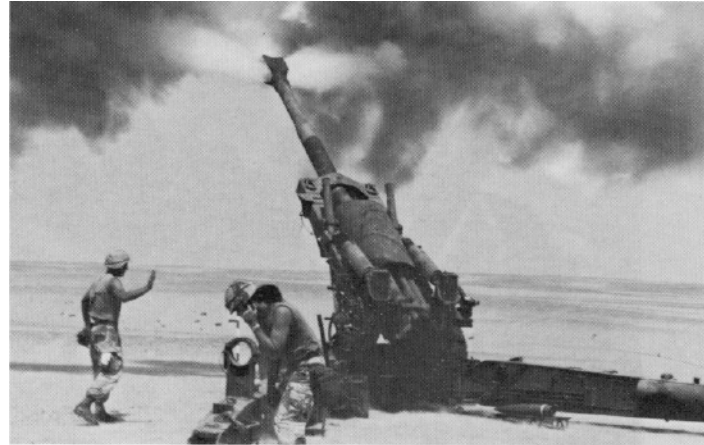
**\*The M119 has a longer range because it can fire the M200 Charge 8, and the M102 only can fire to Charge 7.**

## M198

The M198, a 155-mm, towed howitzer, succeeded the M114A1 and provides corps general support for non-mechanized divisions and direct support for infantry and Marine divisions. To increase the current inventory of more than 1,000 M198s, the Army will buy more, starting in FY 88 through FY 91.

More reliable than the M114A1, the M198 has a longer range—up to 30 kms with RAP. It also fires scatterable mines, nuclear rounds, improved conventional munitions, conventional high explosives and Copperhead.

Although 20 percent heavier than the M114A1, the M198 is still light enough



for CH47 and H53E helicopters and various cargo aircraft to carry or parachute-deliver it.

## AFAS

The advanced Field Artillery system (AFAS), the next generation of self-propelled howitzers, is already under development to replace the new M109-HIP. AFAS will be more mobile, have longer ranges and higher rates of fire, use more deadly ammunition and improve survivability.

AFAS will use the most advanced technology, including robotics, artificial intelligence and new propellants—modular charge, unicharge, liquid propellant and electromagnetic propulsion. Concept exploration and requirements definitions will continue through 1989 with fielding projected for FY 97.

### Howitzer— 155-mm, Lightweight, Towed

Field Artillery is also developing a 155-mm, lightweight towed howitzer, providing the next generation weapon to replace the M198.

The new howitzer, made of lightweight metals and composite materials, will weigh 9,000 pounds or less and have a range of 30 KM with RAP. The reduced weight will enhance its tactical and strategic ground and air mobility. The contractor will test the system in May with fielding projected for FY 94.

# Missiles and Rockets

## MLRS

The multiple launch rocket system (MLRS) uses two replaceable, prepackaged rocket pod containers of six rockets each mounted on an M270 armored vehicle to strike deep in the division's area of influence. The MLRS supplements cannon artillery by delivering devastating volumes of firepower in a short time against critical, soft targets such as enemy artillery or air defense. The launcher

can fire its rockets one-at-a-time or in rapid automatic fire, at targets more than 30 km away. In addition to the DPICM warhead, MLRS can deliver the German scatter-able mine warhead, NATO's terminally guided warhead (TGW) now being developed, the sense and destroy armor (SADARM) artillery munitions and the binary chemical warhead (BCW). Though the MLRS usually requires three





crew members, one soldier can fire and reload the system in an emergency.

In addition to the nine-launcher MLRS battery organic to mechanized and armored divisions, corps will have an MLRS battalion of three identical firing batteries. Fielded in 1983, MLRS will be deployed in the armies of six other NATO countries.



## Lance

Lance is a deep attack missile which can hit targets well beyond the rocket and cannon ranges. Using conventional munitions, Lance can hit soft targets such as air defense and logistics sites that are 91 km away. Using nuclear munitions, Lance can hit targets 133 km away.

The Lance missile primarily uses the M752 launcher; however, the self-propelled M752 can be converted into a lightweight towed launcher with a mobility kit, allowing the Lance to be airlifted.



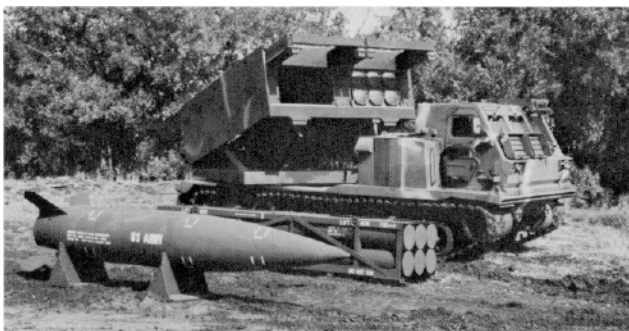
## Pershing II

Recently the subject of many Soviet-American nuclear arms reduction discussions, Pershing has 108 missiles in the European theater, which have been fully operational since 1985. The terminally guided Pershing

II, an improved version of the Pershing I and Pershing Ia, is 10 times more accurate than its predecessors. Because of its accuracy, Pershing II can give a smaller nuclear yield, minimizing the damage to nonmilitary areas near the target to an extended range of 1,800 km.

### Comparing the Pershing II with the Pershing Ia

Category	Pershing Ia	Pershing II
Range	400 miles	1,000 miles
Yields	Larger	Smaller
Accuracy	Good	Excellent
Launch response	Sequential	Simultaneous
Guidance	Inertial	Terminal



## ATACMS

The Army tactical missile system (ATACMS) is the future replacement for the conventional Lance. ATACMS will improve Lance in a number of ways, including having a higher rate of fire, using less manpower and having a much longer range.

ATACMS gives the corps commander the organic fire support to fight at operational

depths beyond the range of cannon and rocket artillery. With ATACMS, he can degrade the enemy's ability to support the close-in battle.

The MLRS's M270 launcher will be ATACMS basic carrier. However, each M270 will be able to fire both MLRS and ATACMS munitions. ATACMS is scheduled for fielding in FY 91.

# Target Acquisition

## RPV

The Aquila remotely piloted vehicle (RPV) is an unmanned, air vehicle currently under development for advanced, accurate, comprehensive target acquisition in AirLand Battle. It supports commanders in the deep attack by rapidly providing critical battlefield information for firepower or intelligence purposes. It detects and identifies stationary and moving forces well beyond the range of ground-based sensors or observers.

The RPV can fly deep into enemy territory and locate targets, adjust artillery fire and designate targets for destruction by laser-seeking munitions. It also can perform

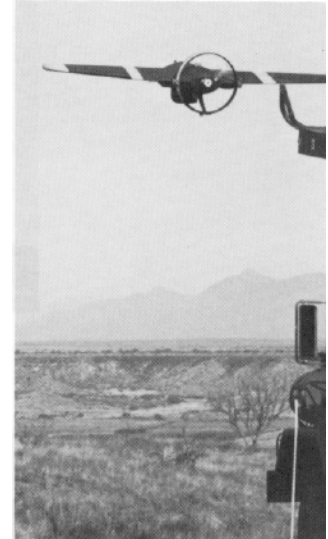
surveillance, reconnaissance, damage assessment and other functions.

Rail-launched from a truck and recovered in a net after its mission, the laser-designating RPV carries a daylight television camera or a forward looking infrared (FLIR) sensor payload. When the RPV detects a target, the operator centers a cross-hair sight on the target portrayed on the television screen, locates it using the payload's laser range-finder and transmits the resulting target coordinates to an artillery unit for engagement. The RPV can orbit in the target area to adjust artillery fire. The operator also can illuminate a target with a laser

beam, thus allowing target engagement with laser-seeking weapons such as Hellfire, Copperhead or Air Force laser-guided munitions.

Powered by a two-cylinder, 26-horsepower engine driving a pusher propeller, the RPV is six feet long and has a wingspan of almost 13 feet. The vehicle weighs about 260 pounds and can cruise for three hours, achieving a service ceiling of 12,000 feet. It operates at speeds of between 56 and 113 mph.

As a corps asset, an RPV battery will have 13 air vehicles. The Aquila RPV is in full-scale development with initial operational capability expected in FY 92.



## Firefinders

The Firefinder family, consisting of the AN/TPQ-36 and AN/TPQ-37 radars, detects enemy indirect-fire weapons systems. Fielding will be completed by FY 89.

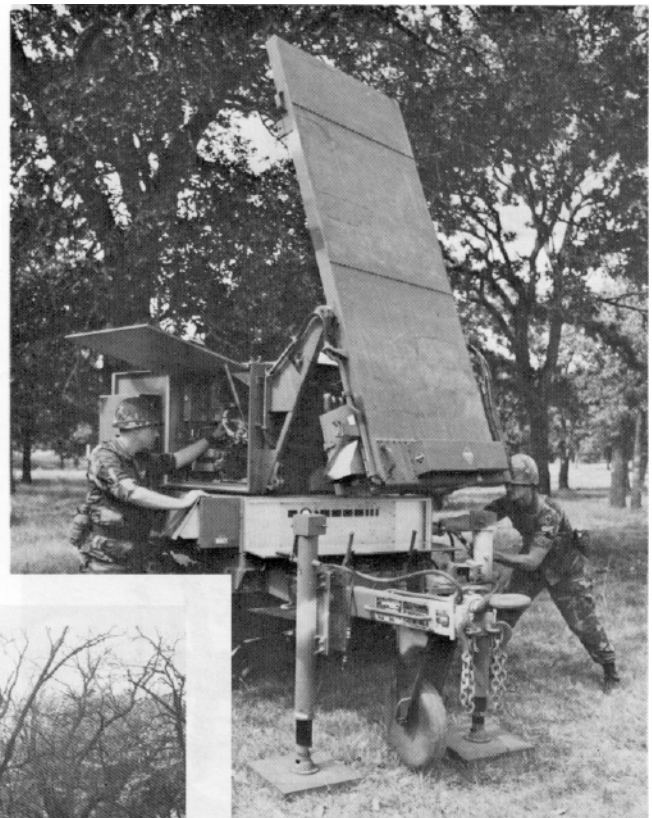
**AN/TPQ-36** is highly mobile and detects the enemy's high- and low-angle trajectory weapons. It has a maximum range of 24 km and an azimuth sector of coverage of 1,600 mils with up to 6,400 mils of coverage in the extended-azimuth mode. The Q36 and the Q37 each locate 10 weapons firing simultaneously and store up to 99 targets in permanent memories. They have digital communications to transmit information rapidly.

**AN/TPQ-37** is best for locating weapons firing low-angle trajectories. The less mobile Q37 operates from eight to 12 km behind the forward line of own troops (FLOT). It has a maximum range of 50 km and an azimuth sector of coverage of 1,600 mils.

**Firefinder II** is a developmental project to combine the capabilities of the two radars into one advanced radar. Improvements could include better target detection, mobility and survivability. Firefinder II will be able to identify enemy fires as far as 36 km away. It also will be able to

pass target and command and control data while moving.

Mounted on a single vehicle, Firefinder II will communicate by digital and voice radio with the advanced Field Artillery tactical data system (AFATDS), tactical fire direction system (TACFIRE), battery computer system (BCS), MLRS and RPV. It also will link with the all-source analysis system (ASAS) through the fire support element (FSE) to give the commander an immediate view of the enemy's indirect fire positions. Each division will have four radars with fielding projected to start in FY 95.

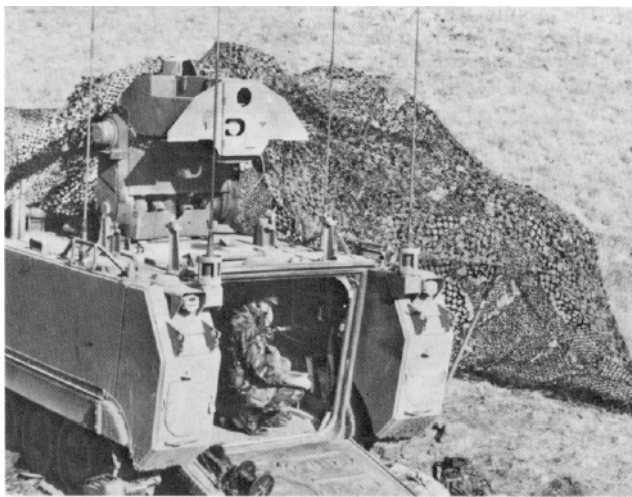




## ETAS

The elevated target acquisition system (ETAS) is a multi-sensor platform under development for target location and surveillance. With ETAS, the maneuver brigade commander will have a responsive, survivable system to locate targets. It will replace the AN/TPS-25, TPS-58, PPS-15 and the PPS-5 systems.

Mounted on a 20-meter telescoping mast, ETAS will employ passive sensors for target acquisition of up to 10 km and a low-probability-of-intercept radar for targets up to 20 km.



## FSV

The M981 fire support vehicle (FSV) is a versatile, armored target acquisition vehicle. It can communicate with artillery command posts and firing units by voice and digital message. The FSV is an M113-series armored personnel carrier modified for artillery observers to use in mechanized and armored units.

The M981 FSV has a top-mounted "hammerhead" the operator can raise or lower, which contains the forward observer's ground vehicular laser locator designator (G/VLLD), AN/TAS-4 night

sight and north-seeking gyrocompass. The 14-ton FSV can transport its four-man crew up to speeds of 35-mph, and it has a cruising range of up to 300 miles.

Each maneuver company fire support team and each brigade combat observation lasing team (COLT) found in an armored and mechanized division also will have the FSV.

Some 719 FSVs are already in use in Europe, Korea and in the continental United States. Modification of the remaining M113s should occur by 1990.



## OH58D

The OH58D helicopter is a fully-integrated aerial platform for target acquisition, designation and handoff. It operates in adverse weather, day or night.

Each OH58D has a two-man crew: an aerial fire support officer (AFSO) and a commissioned or warrant officer pilot. The AFSO is responsible for using the aircraft's mission equipment to effectively coordinate all fire support assets and provide vital intelligence and tactical damage assessment. To aid the AFSO in his duties, the OH58D has an impressive mission equipment package.

- An attitude heading and reference system (AHRS) provides constantly updated aircraft

position, attitude, altitude and heading displays in the cockpit.

- A laser range finder-designator (LRFD) calculates eight-digit grid coordinates accurately enough for first round fire-for-effect. It allows laser-guided bombs, Hellfire, Copperhead and other laser-guided munitions to be pinpoint accurate.

- An airborne target handover system (ATHS) communicates digitally with TACFIRE and other digital message devices.

The current fielding plan calls for 10 active divisions each to receive six OH58Ds. Separate artillery brigades in support of the XVIII Airborne Corps, VII Corps and V Corps also will receive additional aircraft.



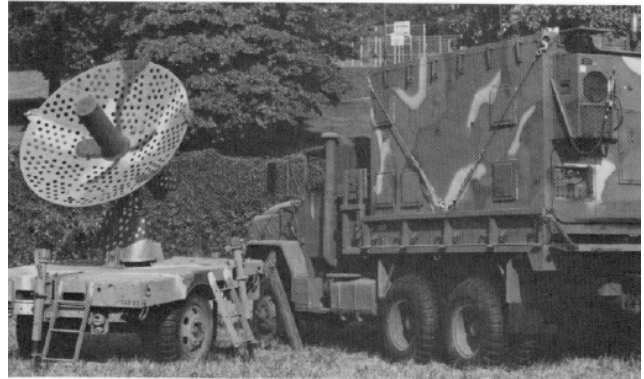
# Meteorology and Survey

## MDS

The meteorological data system (MDS) is a new mobile, automated system that collects, processes and transmits meteorological data to fire direction centers (FDC). It interfaces digitally with TACFIRE, BCS and AFATDS. The MDS also will provide information for chemical sections to use to predict radiological fallout and for the Air Force to forecast weather.

The MDS consists of a non-radiating ground acquisition and processing station mounted in an S280 shelter on a 5-ton vehicle and a trailer-mounted, radio-direction-finding antenna. The system uses balloon-borne, battery-powered, meteorological radiosondes.

Experts are exploring an alternate, smaller system for the light divisions. The Army will begin fielding the 55 MDSs in the third quarter of FY 88.



## G/VLLD

The ground/vehicular laser locator designator is a fire support tool to find the range and azimuth of and elevation to targets. Because of its accuracy, it saves ammunition and time to get the conventional munition on the target. It also can project an invisible, coded laser spot so homing munitions such as Copperhead, Hellfire, the

Marines' Maverick and the Air Force's laser-guided munitions can destroy targets. The laser spot tracker in close air support aircraft detects the spot, allowing the pilot to accurately attack a target on the first pass with either conventional munitions or precision guided munitions (PGMs).

Usually mounted on the fire support vehicle, the G/VLLD

also can be tripod-mounted for ground operations. In light divisions, the combat observation lasing teams (COLT) will receive the G/VLLD and transport it on the HMMWV.

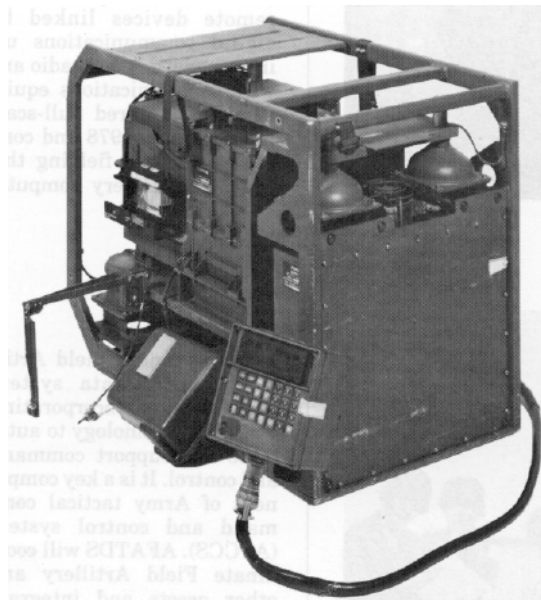
Selected units in Europe, Korea and the continental US already have G/VLLDs. Worldwide fielding will continue through 1989.



## PADS

The AN/USQ-70 position and azimuth determining system (PADS) is the Field Artillery's primary survey system. Currently used in Patriot battalions and other artillery survey sections, it is a self-contained, inertial system that can rapidly and accurately determine positions, elevation and azimuth. The two operators can install PADS in the HMMWV, commercial utility cargo vehicle (CUCV), M151 trucks or OH58 and UH1 helicopters.

PADS has a survey radius of 55 km from the last update survey control point and a seven-hour mission ability. PADS can store up to 30 reference points in its memory.



## SEDME-MR

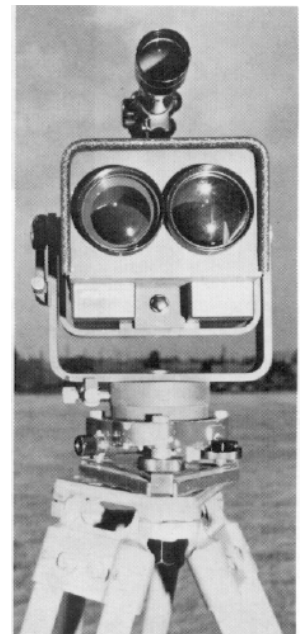
The survey electronic distance measuring equipment-medium range (SEDME-MR) is the military version of a commercial lightweight instrument that measures from 30 to 7,000 meters in a matter

of seconds. It operates day or night and allows conventional survey parties to provide accurate, responsive common survey control.

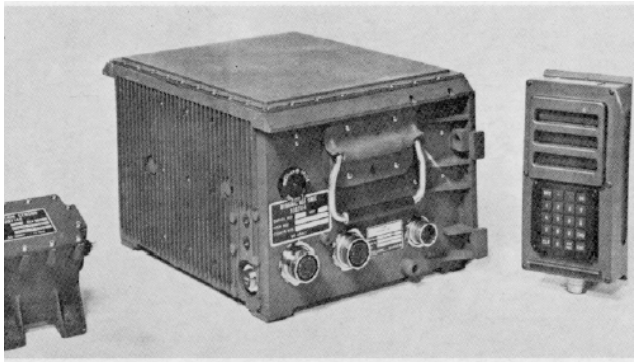
SEDME-MR is best for short- and mid-range survey.

When used with other conventional survey equipment, it adds needed flexibility to PADS operations.

SEDME-MR is currently replacing the distance measuring microwave system and



the DM60. Each active and reserve component artillery conventional survey party will receive one instrument when its MTOEs are properly documented.



## MAPS

The new modular azimuth positioning system (MAPS) will give rapid and constant position information to combat vehicle crews, even when the crews are "buttoned up." MAPS will be part of the overall fire or sensor control system and standard for use in many vehicles.

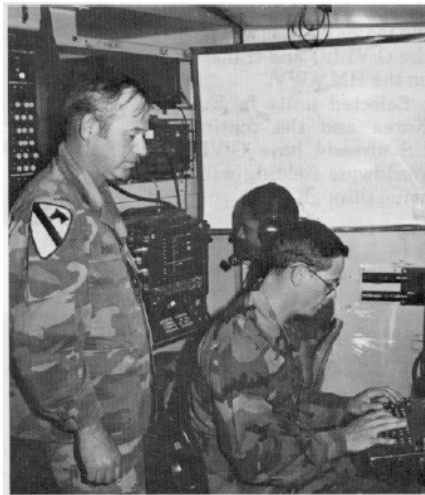
When initialized and updated with survey control data currently provided by PADS, MAPS will provide onboard position and azimuth data for various weapon and sensor systems and help autonomous operations. The PADS-MAPS configuration

eventually will yield to a totally autonomous position and navigational system that integrates MAPS with an onboard global positioning system (GPS) receiver. The GPS is a satellite-based positioning system.

MAPS will be available for various weapon and sensor systems, including the M109- and M110-series howitzers, towed howitzers, Lance, Pershing II, Patriot, RPV, Firefinder II radar and ETAS.

The first and largest MAPS user will be the HIP M109A3E3 scheduled for fielding in FY 89.

# Command and Control



## TACFIRE

The tactical fire direction system (TACFIRE) is an integrated, computer-based command and control system that automates Field Artillery functions. It provides efficient management of resources at the Field Artillery battalion, brigade, division and corps echelons. TACFIRE consists of computers and remote devices linked by digital communications using standard Army radio and wire communications equipment. It entered full-scale production in 1978 and completed its final fielding this year. The battery computer

system (BCS) and digital message devices (DMD) augment TACFIRE.

In 1989, the Field Artillery brigade and division artillery systems will get compact L3212D computers to replace six components. The change will reduce the size of the system and the power required to operate it. It also will increase memory by 50 percent.

Based on the initial technological breakthrough provided by TACFIRE automation, the Advanced Field Artillery Tactical Data System (AFATDS) is being developed to replace TACFIRE.



## AFATDS

The advanced Field Artillery tactical data system (AFATDS) is incorporating emerging technology to automate fire support command and control. It is a key component of Army tactical command and control system (ATCCS). AFATDS will coordinate Field Artillery and other assets and integrate fire support into battle plans. It will replace TACFIRE and its variable format message entry device (VFMED). It will be interoperable with other current and projected fire support tactical data systems.

AFATDS will consist of a number of computer terminals

and software modules tailored to perform fire support functions. Its software will be in the standard Department of Defense language, Ada, and will be modular to make changes and upgrades easier. The modules will be able to shift functions to other operations facilities during combat, helping continuity of operations.

AFATDS will use state-of-the-art ATCCS common hardware. Its hardware requirements, based on the functional requirements of the system, will allow for growth.

Fort Sill will conduct an AFATDS concepts evaluation test in FY 88.

## FIST DMD

The fire support team digital message device (FIST DMD) increases the battlefield effectiveness of the FIST at maneuver company level in the heavy divisions. Employed in the headquarters of all company FISTs, it can display, store, edit, monitor and forward fire support requests from platoon forward observers.

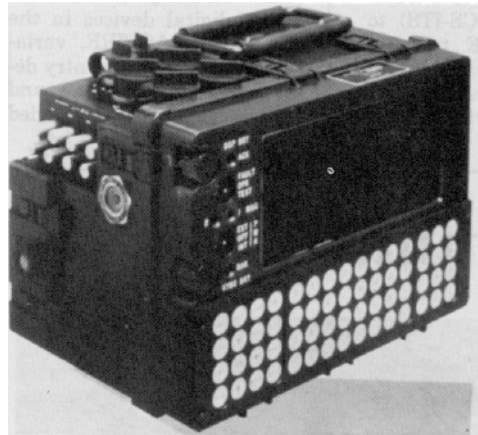
FIST DMD is an expanded and improved version of the AN/PSG-2A DMD. Its design is similar to the standard DMD, and it uses similar formats. An expanded rear case has additional wire and radio connections, giving it a four-channel capability with the radios available to the FIST headquarters.

The FIST DMD will serve as a standard DMD and also perform "FIST" headquarters

functions with operational modes of automatic, review and fire request approval.

The FIST DMD can list 20 subscribers assigned in any combination of four nets and has a subscriber data file for each subscriber. It has an indexed, received-message buffer that is 20 messages deep and a message copy file for the 16 most recently transmitted messages. The FIST DMD can store and automatically update data for 36 subscriber missions. It has four message authenticator files with 100 authenticator pairs each. It has two concurrent active local mission buffers with seven off-line local mission and message buffers; the latter may relocate to either of the active mission buffers.

The FIST DMD fielding begins in second quarter FY 88.



## BCS/FDS

The battery computer unit (BCU) is a rugged portable computer to support the Field Artillery into the 1990s. It provides fast and accurate technical control for all cannon, light missile and rocket units. It features a 1,728 character plasma display, 128x24 bit word memory with error detection and correction circuitry for fail-safe reliability. The BCU houses a magnetic tape cartridge for software program and data

storage. It works with existing communications equipment and transmits data digitally with WD-1 wire and AM/FM radios.

When the BCU is configured with the gun display unit (GDU) components and appropriate software, it becomes the battery computer system (BCS) for use with cannon artillery systems. The BCS capabilities include simultaneous fire control of up to 12 weapons, storage and application of standard and non-standard ballistic parameters,

basic survey routines and storage of multiple fire plans and mission data. Currently, the BCS is undergoing modifications to increase the systems memory to accommodate improved software.

When the BCU is configured with the AN/PD-74 printer and appropriate software, it becomes the fire direction system (FDS) for use in MLRS and Lance battalions and batteries with plans for issue to the MLRS platoon headquarters. The FDS provides

tactical control for both the Lance and MLRS units and technical firing data for the Lance system.

MLRS FDS Version 8 software fielding begins in FY 88.

FDS Version 9 will consolidate both Lance and MLRS on one tape unit and will incorporate the new family of MLRS munitions. FDS Version 9 will be fielded in FY 90.

## BUCS

The backup computer system (BUCS) is a small, handheld computer used by Field Artillery units for gunnery and survey computations. The BUCS is the backup system for units with BCS and is the primary automated capability for units without BCS. BUCS can compute gunnery solutions by determining individual weapon data for up to eight howitzers, considering weapon corrections and nonstandard conditions. The system prompts the operator and reduces proficiency training needed in the unit. BUCS retains its memory when turned off.



BUCS is available in two configurations: BUCS Special with printer and BUCS General without printer. Survey control centers and Lance units receive the special, and cannon units and survey parties receive the General. The printer can be ordered from the additional authorization list (AAL). Except for the M119 105mm howitzer, read only memory (ROM) chips are available for all cannons and Lance.

## BCS-ITS

The Field Artillery School developed the battery computer system-interface training simulator (BCS-ITS) to provide TACFIRE training for BCS or MLRS and Lance FDS operators. The BCS-ITS trains at the battery

level without requiring the other system devices to be on-line.

BCS-ITS does this by simulating digital message traffic that normally comes from other digital devices in the battalion (TACFIRE, variable format message entry device – VFMEDS, BCSs and DMDs). It uses pre-recorded

lesson tapes in conjunction with manuals to exercise interoperability skills. An operator merely connects the BCS-ITS to the BCS/FDS/GDU with WD-1 wire, loads the appropriate lesson tape and performs the situational requirements outlined in the text. The BCS-ITS begins transmitting a series of digital

messages to the BCS/FDS/GDU, which prompts the operator to perform the required actions to process the message. The BCS-ITS also acknowledges messages transmitted by the BCS/FDS/GDU. The trainer (section chief) has a corresponding instructor's manual to allow him to help the soldier.

# Ammunition



## 105-mm Ammunition

The Chief of Staff of the Army directed the 105-mm ammunition improvement program to complement the M119 howitzer program. The improved munitions will provide longer range and improved lethality. The program includes two projectiles: the high explosive rocket assisted (HERA) cartridge and a dual-purpose improved conventional munitions (DPICM) cartridge.

The XM913 - XM927 HERA cartridges will provide extended ranges for the Field Artillery's family of 105-mm howitzers. The XM913, used exclusively with the M119 howitzer and the M200 propelling charge, will achieve a maximum range of 19.5 km. The XM927, used with all 105-mm howitzers, will achieve a maximum range of 15 km with the M67 propelling charge. Initial operational capability (IOC) begins in fourth quarter FY 88.

The XM915 - XM916 DPICM cartridges will improve the capability of the

light forces to engage light armor or motorized forces. The projectiles use a new grenade, XM80, that will have two times the effectiveness against personnel over the current M444 antipersonnel munition and have armor penetration equal to the M42/M46 grenades in the M483 DPICM. The XM915, used with the M119 howitzer, has a maximum range of 14 km. The XM916, used with all 105-mm howitzers, will achieve a maximum range of at least 11 km with the M67 propelling charge.

## 155-mm Ammunition

The M795 high explosive (HE) projectile will replace the standard M107 HE shell for 155-mm weapons. It provides increased effectiveness as well as a 24 percent greater range than the M107 when used with the M203 propelling charge. Redlegs can use the M795 as a low-cost registration round for 155-mm payload ammunition.

**M687 Binary Chemical**  
The projectile has two components that make up its lethal

dose that stay separate until gunners prepare the round for firing. In fact, the projectile comes with one chemical canister inside the shell and the second canister in a wooden box. Personnel at the ammunition supply point (ASP) remove the projectile's base plate, insert the second canister, replace the base plate and issue the projectile. After firing, set-back force punctures the two canisters, and the spin force mixes the chemicals, making the lethal mixture.

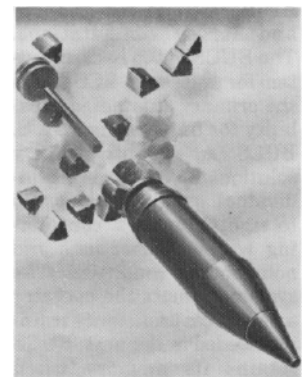
The M712, Copperhead, is a cannon-launched guided projectile (CLGP) antitank round that homes in on the target. After the projectile is fired, the forward observer lases the target during the last portion of the projectile's flight. A homing device picks up the reflected laser energy and the projectile homes in on the target. It achieves a maximum range of 16.4 km.

The new M825 smoke projectile provides a dramatic increase in obscuration effectiveness over that of current smoke projectiles. Instead of being bulk loaded as is the white phosphorus (WP)

round or canister loaded as is the old smoke round, the improved M825 contains felt wedges impregnated with WP. These fall to the target area in a large pattern and produce smoke for five to 10 minutes. It can achieve a range of 22.6 km.

The M692-M731 area denial artillery munitions (ADAM) projectiles are similar ballistically to the M483A1 (DPICM), base-ejection, payload carriers that deliver anti-personnel mines onto a target area. Both projectiles contain 36 anti-personnel mines. The M692 contains M67 mines with greater than 24-hour self-destruct time (SD) and the M731 contains M72 mines with less than 24-hour self-destruct times. If enemy formations disturb the mine, pull a trip wire or if the SD time expires, a liquid propellant under the kill mechanism ignites, propelling a grenade into the air where it detonates at two to eight feet above ground.

The M718-M741 remote anti-armor mine system (RAAMS) projectiles also are similar ballistically to the M483A1 (DPICM), base ejection, payload carriers that deliver anti-armor mines onto a



ADAM

target area. Both projectiles contain nine magnetic anti-armor mines. The M718 contains M-70 mines with greater-than 24-hour SD time and the M741 contains the M73 mines with a less-than-24-hour SD time.

The **M549A1** is a **rocket assisted projectile (RAP)** weighing approximately 96 pounds. The warhead consists of high-fragmenting steel and contains 16 pounds of TNT. Once ignited, the rocket motor burns for three seconds, producing an increase in velocity and range. The M549A1 is in production and is being stockpiled in Europe, CONUS and Korea.

The **XM864 extended-range, dual-purpose improved conventional munitions (ERDPICM)** projectile takes advantage of base-bleed technology to provide extended ranges over the M483 DPICM. It achieves a 20-30 percent increase in range through the use of pyrophoric (spontaneously ignited in air) granules in the base of the projectile. The granules ignite upon firing and create a positive overpressure behind the base of the projectile. It achieves maximum ranges of 22 km and 27 km when used with the M109 and the M198 howitzers, respectively. The XM864 is in full-scale development. Type classification begins in fourth quarter FY 87.

The **XM785 nuclear RAP** will produce a nuclear fission. As an improvement over the current M454 nuclear projectile, the XM785 will be more reliable and will achieve greater ranges and larger nuclear yields. The XM785 will be compatible for use in all US 155-mm howitzers and in the M109A3 and FH 70 155-mm NATO howitzers. The projectile is in developmental testing.

## 203-mm (8-Inch) Ammunition

The **M509A1 DPICM** projectile is the follow-on to the M404 improved capabilities missile (ICM). Filled with 180 M42 munitions, the M509A1 is effective against light materiel and personnel whereas the M404 is used only against personnel. Currently in production, the



M509A1 also has a self-registration mode.

The **M650 RAP** is the registration round for the 8-inch M753 nuclear projectile. With the M188A1 propelling charge, the M650 can achieve ranges of 30 km with the rocket on and 24 km with the rocket off. The M650 is in production.

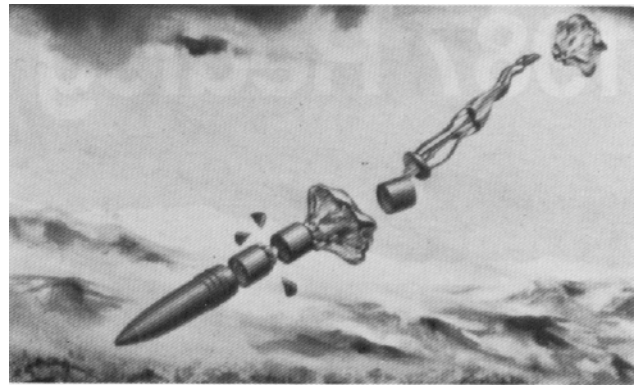
The **XM736 binary chemical projectile**, a US Army Chemical School effort, will replace the current M426 chemical projectile. It will contain two separate liquid-filled containers and form a lethal agent when the contents mix during flight.

## Fire-and-Forget Munitions

**Sense and destroy armor (SADARM)** artillery munitions are fire-and-forget munitions delivered by the MLRS and 155-mm howitzers. The SADARM submunitions will orient, stabilize and descend by parachute over the target area. The submunition's millimeter wave or infrared sensor identifies the target and fires an explosively-formed penetrator to destroy it.

These munitions will primarily be used against counterfire targets but also against other targets in close support, interdiction and suppression of enemy air defense. SADARM is scheduled for fielding in the mid 1990s.

The **multiple launch rocket system-terminally guided warhead (MLRSTGW)** concept is a free-flight rocket with a fire-and-forget warhead with three to six terminally guided submunitions



## SADARM

(TGSM). Unlike the SADARM submunition, which senses targets, the MLRS-TGW submunition actively seeks targets with the millimeter wave (MMW) horizontal glide seeker. The MLRS-TGW is under development.

## XM773 MOFA Fuze

The XM773 multi-option fuze artillery (MOFA) will meet existing logistical and operational needs. The proliferation of various fuze types and models that Field Artillery units must carry is excessive. A single XM773 MOFA will accomplish any of four different fuze actions now handled by several current fuzes used with burster-type projectiles. It will provide a 199.9 second electronic time fuze capability, a penetrator for 12 inches of mortared brick, proximity functioning with variable heights of burst and a delay-after-impact function.

The MOFA will replace the following fuzes: mechanical time super quick (MTSQ)-M564, M582, M557, M739/M739A1; proximity (VT)-M513, M514, M728, M732; and electronic time-M767. It will be compatible with all fielded and developmental 105-mm, 155-mm and 203-mm artillery bursting projectiles. Initial operational capability (IOC) for the MOFA begins second quarter FY 92.

## 155-mm Modular Propelling Charge

The 155-mm modular propelling charge system is the Field Artillery's improved charge system. It will reduce



vulnerability and the labor intensive nature of servicing the 155-mm howitzer and increase its rate of fire. It is compatible with automatic loading equipment. The desired result is a more survivable howitzer with more firepower.

The modular charge's combustible, rigid case will be compatible with all current and future 155-mm howitzers to include NATO howitzers. This charge system also will be compatible with all current and developmental 155-mm projectiles to include the XM785 nuclear projectile. To facilitate higher rates of fire provided by automatic and semi-automatic loading equipment, this charge system will replace the current bag charges used by the Field Artillery.

Initial operational capability of the modular charge begins fourth quarter FY 89.



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