



# Field Artillery

*A Professional Bulletin for Redlegs*

August 1992



## Managing Change



August 1992

HQDA PB6-92-4

**FEATURE ARTICLES: Managing Change in USAREUR**

- 8 An Introduction: USAREUR in Transition
- 10 Making History—Changing the Face of USAREUR  
*An Interview with General Crosbie E. Saint, Former Commander-in-Chief, US Army Europe and Seventh Army*
- 16 Fighting with Fires in the 3d Infantry Division: Training a Division "On the Bit"  
*by Major General Richard F. Keller*
- 21 Fighting the 1st Armored Division: Fires and Maneuver--One and the Same  
*by Major General William M. Boice*

**FEATURE ARTICLES: Relooking Change**

- 25 1992 US Field Artillery Association's Seventh Annual History Writing Contest Winners and Judges
- 25 1993 US Field Artillery Association's Eighth Annual History Writing Contest Rules
- 26 First Place—Battle-Focused Training and TTP: The Battle of Koniggratz  
*by Captain Steven J. Eden, AR*
- 30 Second Place—The Battle of Antietam: The Creation of Artillery Hell  
*by Major Albert A. Mrozek, Jr.*
- 40 Nuke..."End of Mission, Out"  
*by Major Michael L. Kirk*

**ARTICLES**

- 35 FSCM on Future Battlefields  
*by Major William B. Carlton*
- 42 Targeting the Silent Enemy: The Field Artillery FY 91 Accident Report  
*by Major Kenneth R. Wood*

**DEPARTMENTS**

- 1 ON THE MOVE
- 4 FROM THE GUN LINE
- 5 INCOMING
- 38 REDLEG REVIEW

Front Cover Photo: Kevin Tucker

**DISCLAIMER:** *Field Artillery*—a bimonthly professional bulletin for Redlegs (ISSN 0899-2525)—is published by Headquarters, Department of the Army, under the auspices of the US Army Field Artillery School, Building 746, Fort Sill, OK. The views expressed are those of the authors, not the Department of Defense or its elements. *Field Artillery's* content doesn't necessarily reflect the US Army's position and doesn't supersede information in other official Army publications. Use of news items constitutes neither affirmation of their accuracy nor product endorsements.

**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.*


**SUBSCRIPTIONS:** May be obtained through the US Field Artillery Association, P.O. Box 33027, Fort Sill, OK 73503-0027. Telephone numbers are DCTN 639-5121/6806 or commercial (405) 355-4677/8745. Dues are \$18.00 per year (\$35.00 for two years and \$52.00 for three years) to US and APO addresses. All others add \$12.00 per subscription year for postage.


**SUBMISSIONS:** Mail to Editor, *Field Artillery*, P.O. Box 33311, Fort Sill, OK 73503-0311. Telephone numbers are DCTN 639-5121/6806 or commercial (405) 351-5121/6806. Material submitted for publication is subject to edit by the *Field Artillery* staff; footnotes and bibliographies may be deleted due to space limitations.

**REPRINTS:** *Field Artillery* is pleased to grant permission to reprint articles. Please credit the author and *Field Artillery*.

**POSTMASTERS:** Second-class official mail postage is paid by the Department of the Army at Lawton, OK 73501. Send address changes to *Field Artillery*, P.O. Box 33311, Fort Sill, OK 73503-0311.

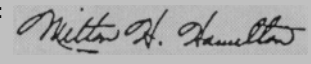
**Hotlines**

**Redleg Hotline:**  
 DCTN 639-4020  
 Commercial (405) 351-4020

**ARTEP/MTP Hotline:**  
 DCTN 639-5004  
 Commercial (405) 351-5004

By Order of the Secretary of the Army:

**GORDON R. SULLIVAN**  
 General, United States Army  
 Chief of Staff

Official: 

**MILTON H. HAMILTON**  
 Administrative Assistant to the  
 Secretary of the Army  
 01271

**Fred F. Marty**  
 Major General, United States Army Field Artillery  
 School Commandant

**Editor:**  
 Lieutenant Colonel Jerry C. Hill  
 Managing Editor: Patricia Slayden Hollis

**Art Director:**  
 Donna J. Covert

**Assistant Editor:**  
 Joanne Alexander Brown



**B**uilding down is a reality in the Army and, closer to home, in the Field Artillery. Though the process involves reducing the force, it also involves developing a force that's more efficient and more universally capable, one that takes full advantage of superior technology for the fewer soldiers remaining. To build that future force, we must look ahead to the impact of high technology, consolidate personnel functions and tasks and maintain a high state of combat readiness. Anything less mortgages the future of our Branch.

### Near Term

In the near term, we must monitor the immediate impact of the drawdown on the Army and Branch and take care of the soldiers leaving the force. The gross numbers of the reductions are public knowledge. But what you may not know are some of the numbers impacting on our Branch (see Figures 1 and 2).

Figure 1 gives the Army and FA voluntary separation figures. With few exceptions, all enlisted soldier separations have been voluntary, and 100 percent of the warrant officer (WO) separations have been voluntary.

VSI and SSB windows of opportunities could be offered throughout the drawdown years but only if the Army budgets for them; there are no guarantees the programs will continue through FY 94.

Figure 2 gives the voluntary separations by FA military occupational specialty (MOS). The overall impact of the separations is that some commands will experience shortages in some MOSs, including 13E Cannon Fire Direction Specialist and 13F Fire Support Specialist. We and the US Total Army Personnel Command (PERSCOM), Alexandria, Virginia, are working to alleviate these shortages as quickly as possible. We will continue to monitor the reductions in FA MOSs to ensure sufficient soldiers are available in the distribution our field units require.

## Developing Soldiers and Leaders for the Future

VSI, SSB and VET or VERRP		
	Army	FA
Enlisted Soldiers	46,885	2,600
Warrant Officers	267	1
Officers	6,579	667
<b>Total</b>	<b>53,731</b>	<b>3,268</b>

Legend		
<b>VSI</b>	=	Voluntary Separation Incentive (Annual Annuity)
<b>SSB</b>	=	Special Separation Benefit (Lump Sum)
<b>VET</b>	=	Voluntary Early Transition (Junior Enlisted Soldiers Release from Service Obligation with no Money Involved)
<b>VERRP</b>	=	Voluntary Early Release and Retirement Program (Officers Early Release from Service Obligation or Early Retirement with Retirement Pay at Their Highest Ranks)

Figure 1: Army and FA Voluntary Separations

MOS	VSI/SSB	VET
13B	740	737
13C	0	27
13E	151	129
13F	161	191
13M	88	75
13N	16	13
13P	39	10
13R	34	23
82C	76	63
93F	16	11

Figure 2: FA Voluntary Separations by MOS. Though MOS 13B at first glance appears to be affected the most, it is the largest of the FA MOSs and was not affected significantly. The most significant impact of the separations on FA MOSs was on 13E and 13F.

Though there have been no enlisted soldier or warrant officer reduction in force (RIF) boards, officers have had one RIF in March of this year. The Year Group (YG) 78 (majors) RIF board selected 244 officers Army-wide; the March board originally anticipated having to reduce YG 78 by 875 officers, but enough officers elected to take voluntary separation benefits to reduce the number of officers forced out by 72 percent.

The officer RIF board for YG 82 (captains) was recently cancelled because enough officers volunteered to separate to meet that year group's projected end-strength. PERSCOM plans to conduct two RIF boards annually for over-strength year groups throughout the drawdown with each year group considered only once.

In terms of selective early retirement boards (SERBs), the one enlisted SERB conducted considered sergeants major, affecting only a few Redlegs. The first WO SERB tentatively is scheduled for the first quarter of FY 93. PERSCOM anticipates having a WO SERB each year for the next two years.

The 1,644 officers selected Army-wide for early retirement were those selected from 6,319 officers considered. PERSCOM anticipates an annual officer SERB for the next two years.

Eligibility criteria changes with every SERB. Beginning this year, once an officer is considered for a SERB, he is no longer exempt from subsequent SERBs. Previously, an officer was exempt for five years once considered but not selected by a SERB. Also, for the first time in many years, the SERB had access to the eligible officers' restricted microfiche.

### Mid Term

Army-wide, the future promises a younger, more multi-capable force with promotions and schools coming faster for soldiers of all ranks. But we will experience significant personnel turbulence until the Army reaches its objective force in FY 95.

On at least one aspect of personnel management, the exodus from the Army is having a positive effect immediately—increased promotion opportunities for our

enlisted soldiers. This summer, we expect a substantial increase in sergeant and staff sergeant promotions. By the summer of 1993, the outlook for sergeant first class and master sergeant promotions also is likely to improve.

To ensure our enlisted soldiers are competitive in the upcoming promotion surges, it is imperative FA leaders and commanders *identify* and *program* qualified soldiers for early attendance to NCO Education System (NCOES) schools. At the same time, soldiers must ensure their personnel records are accurate and up-to-date. These actions are important not only for promotions, but also for retention. The bottom line: those soldiers not qualifying for promotions are at risk.

Generally, officers will have shorter reassignment notification and shorter tour lengths during the drawdown. Voluntary and involuntary separations are creating shortages in most commands. The resulting redistribution of officers will mean increased turbulence for both the commands and officers involved.

Though officers previously were given approximately 180 days' notice for overseas assignments and 120 days for continental US (CONUS) assignments, they may receive only 90 days' notice to fill requirements created by unprojected losses. Further, officers currently on orders to one location may be diverted to fill positions left vacant by separations. Although the FY 92 Officer Distribution Plan (ODP) could project the number of forced losses, it was not possible to predict the impact of voluntary losses accurately. Through FY 94, turbulence in officer assignments will continue until the Army builds down to its objective force.

Recently, PERSCOM projected time lines for officers to remain on station during the drawdown. Lieutenant colonels and majors may be reassigned after 24 months time on station (TOS). For captains, TOS will vary according to when an officer has a chance to command. Once a captain has commanded and has a minimum of 24 months on station, he is eligible for reassignment. Most lieutenants in their initial assignments can expect to remain until their advanced courses.

## Long Term

In conjunction with the Deputy Chief of Staff for Personnel (DCSPER), we recently conducted a Personnel Functional Assessment and Functional

Review (PFA/FR) to devise an orderly plan for a smaller, more capable Field Artillery. The plan includes a series of personnel initiatives that will simplify and consolidate the number of FA MOSs, enhance other MOSs and utilize WOs and officers each in single areas of concentration (AOCs).

**Consolidation of MOSs.** Superior technology is the Army's insurance against a variety of potential threats. It has revolutionized, or will in the future, a number of tasks across the Branch.

Technology offers more simplified operations and training and frequently enables the same functions to be performed with greater accuracy, in less time and with fewer people. The objective of the consolidation is to apply innovative personnel management efficiencies to conserve manpower and money while taking advantage of advanced technologies.

A new MOS, 13D, will perform the more universal fire direction tasks required for the advanced FA tactical data system (AFATDS), tentatively scheduled for fielding in the fourth quarter of FY 95. The Army Research Institute (ARI) is currently studying the impact of combining 13E Cannon Fire Direction Specialist, 13C Tactical Fire Direction System (TACFIRE) and 13P Multiple Launch Rocket System (MLRS)/Lance Missile Operations Specialist into a single fire direction MOS—13D.

Army-wide, branches are reassessing selected MOSs with an eye toward consolidation and more universality. The consolidations would be based on declining MOS densities due to technological advances, the capabilities requirements of personnel in these MOSs and the similarities of the MOSs' functions.

As part of the PFA/FR, we have identified several FA MOSs for possible consolidation: 13R Firefinder Radar Operator, 82C FA Surveyor and 93F FA Meteorological Crewmember. The consolidation of these MOSs would enhance soldiers' career progression by increasing opportunities for development and promotions and bringing greater stability to these low-density MOSs.

In addition, the consolidation would give brigade and division artillery commanders greater flexibility in assigning soldiers trained to work with "black boxes" in radar, meteorological and survey equipment. Currently, commanders are restricted by the low

number of soldiers available in their units who specialize in one type of equipment.

**Aptitude Score of MOS 13B.** We requested the Department of the Army raise the aptitude area score of MOS 13B Cannon Crewmember from 85 to 95 as one of the initiatives in the PFA/FR. The intent is to raise the quality of new soldiers to meet the demands of the tactics, techniques and procedures (TTP) associated with FA equipment coming on board for the 21st century. The "shoot and scoot" tactics possible with the Paladin and other new capabilities require greater technical and tactical competence of our soldiers and NCOs.

**Additional Skill Identifiers (ASIs).** Tracking soldiers based on ASIs is labor-intensive and unmanageable. To help the DCSPER simplify the personnel management system, the Field Artillery School has plans to embed the training required for ASIs S8 MLRS Organizational Maintenance and X5 Firefinder Radar Maintenance into the advanced individual training (AIT) courses of MOSs 13M MLRS Crewmember and 39C Target Acquisition Surveillance Radar Repairer, respectively. As the instruction is incorporated into the AITs, the ASIs will be abolished, and we will be able to use the skills of our soldiers more efficiently.

**Future MOS—Fires.** With the current fielding of the Paladin M109A6 howitzer and the arrival of the advanced FA system (AFAS) and our developmental munitions, we will be more mobile and autonomous and be able to fire faster and more accurately to defeat an enemy at longer ranges. FA TIP and personnel initiatives must keep pace with our advancing capabilities to make the most of them in future combat operations.

The Paladin is now capable of semi-autonomous operations—a major change in TTP. The future AFAS will be configured to fight autonomously on nonlinear battlefields. TTP for dispersed operations call for our junior NCOs to have greater tactical skills and technical expertise. In addition, those NCOs must have strong leadership skills and show greater initiative for autonomous operations.

To accommodate these expanded requirements, a PFA/FR initiative proposes we create a new "Fires MOS" for soldiers working with the AFAS and, potentially, even the Paladin. This proposal is currently being studied by the Field Artillery School, DCSPER and ARI.



---

---

**“ The most important single concept [DA Pam 600-3] promulgates is that fire support is our industry—Field Artillery is but one of the larger producers within the industry. ”**

---

---

**FA BNCOC.** For a number of years, the FA NCOES has supported NCO academies for the FA basic NCO courses (BNCOCs) at 10 locations, both overseas and in CONUS. To simplify the standardization of the curriculum for all FA BNCOCs, we propose eventually reducing the number of FA BNCOC locations to two: the Fort Sill NCO Academy and the Seventh Army Training Center in Europe. This PFA/FR initiative takes into account the student population reduction due to the drawdown. The FA advanced NCO course (ANCOC) will remain at Fort Sill.

The proposal also has the added benefits of eliminating much of the cost of BNCOC overhead operations and saving manpower. The current 10 BNCOC installations typically have to support course operations with personnel and equipment from their tenant units' tables of organization and equipment (TOEs).

**Target Acquisition WO.** In the past three years, the force structure has changed significantly for our WOs. With the inactivation of Pershing II and Lance missile units, WOs who are technicians in those systems MOSs—130A and 130B—have reclassified or will be retired by FY 94.

Our remaining WO MOS is the Target Acquisition Radar Technician (131A). Also as an initiative in the PFA/FR, we are restructuring this MOS into the Target Acquisition WO (TAWO), giving the force combined arms targeting experts. In addition to being a radar technician, the senior TAWO will maintain continuity and provide expertise in key targeting positions, such as the brigade targeting officer and the division and corps FA intelligence officer (FAIO). At the division and corps, the TAWO will fill one of two FAIO positions at each level.

The restructure will improve WO promotion percentages, restore a more balanced promotion distribution and bring career patterns in line with the Warrant Officer Leadership and Developmental Action Plan (WOLDAP). The number of

our WO authorizations will increase from approximately 100 to 238 with most of the additional 138 TAWOs replacing 13D FA Target Acquisition lieutenants and captains.

**Officer Branch Qualifications.** DA Pam 600-3 *Commissioned Officer Development and Utilization* is due out later this year, and it will include major career development changes for FA officers. The most important single concept the pamphlet promulgates is that *fire support* is our industry—Field Artillery is but one of the larger producers within the industry. The pamphlet's Chapter 11, "Field Artillery," is required reading.

The chapter's career changes emphasize young officer's having a solid foundation in fire support as part of their professional development. To that end, the branch qualification for company-grade officers has been revised. In addition to the 18 months of command (plus or minus six months) required for FA branch qualification, company-grade officers now must have at least 12 months of fire support coordination experience. Qualifying assignments are as a fire support officer (FSO) at the company or battalion levels or any job in the fire support element (FSE) at the brigade, division or corps levels. The intent is to put teeth into the development and qualification of our officers as fire supporters, not just as highly qualified Field Artillerymen.

Also, as outlined in the pamphlet's chapter, FA officers no longer have AOC codes for specific artillery systems. All are being classified as 13A Field Artillery Officers and can expect assignments to units with various systems—light and heavy, cannon and rocket—during their careers.

The pamphlet also establishes professional development requirements for all officers by component and grade while incorporating the three pillars of leader development (institutional training, operational assignments and self-development).

Changes in FA officer professional development requirements call for a continuing commitment from FA assignments branch at PERSCOM, commanders in the field and the officers themselves to ensure every officer has the opportunity to develop the requisite skills.

## Conclusion

There is no denying the Army and the Field Artillery are getting smaller, a sometimes painful process. The Army will retain soldiers based on its manning requirements and their past performance and potential for future service. And it will take care of those soldiers leaving the force.

We will be a high-quality, high-tech force in the future, providing the fire support for which we have always been renowned. In building down, today's actions shape tomorrow's *Field Artillery—On Time, On Target.*



## Field Artillery Conference

**22-26 March 1993, USAFAS.**  
*Purpose:* to discuss doctrine, organization, training, materiel, leader development and soldiers as they relate to fire support, focusing on the combined arms force's perspective. *Attendees:* Active Component, Reserve Component and Marine Corps combined arms commanders and selected general officers service-wide; general officers initially branched Field Artillery, both active and retired; corps artillery, division artillery and Field Artillery brigade commanders; school commandants and their assistant commandants; representatives of the Combat Training Centers (CTCs) and representatives of corporations that are members of the US Field Artillery Association.

**Information About the Conference:** If you have questions or need more information about the Field Artillery Conference, call the Directorate of Training and Doctrine, Operations Division, United States Army Field Artillery School, Fort Sill, Oklahoma, at DCTN 639-6708 or 5771 or commercial (405) 351-3708 or 5771.

## For Those Who Follow: Daily NCODP

by Command Sergeant Major Harold F. Shrewsberry, Commandant, NCO Academy, Fort Sill, Oklahoma

**W**hen our Army was formed, General von Steuben wrote in his first directive that commanders must select the best qualified leaders among the ranks, appoint them as NCOs and charge them with the responsibility of running the daily activities of the organization. This basic principle has been the foundation of the NCO Corps for more than 200 years.

In "running the organization," NCOs have a responsibility to share their knowledge and skills with those who follow them. But first they must know their trade—every detail at every level. Then they must systematically develop their subordinates to standard in an organized, efficient manner through a daily NCO development program (NCODP).

The NCO development process starts with the command sergeant major; he trains the first sergeants and principal staff NCOs. First sergeants train the sergeants first class, who, in turn, train junior NCOs. This is a *daily* function.

Specifically, the command sergeant major ensures the first sergeants have a daily routine scheduled to accomplish the reoccurring activities of the organization and monitors their progress each day. First sergeants conduct formations and daily NCO calls and issue orders and directives concerning that day's activities.

Platoon sergeants delegate tasks to squad leaders and section chiefs. Section chiefs divide the tasks among their junior NCOs and supervise them, ensuring they complete the tasks effectively. The junior NCOs then supervise the enlisted soldiers accomplishing the tasks at hand.

### Daily NCODP

The following schedule depicts a typical day in a unit and the routine activities that must take place. This is one example of how daily activities can be conducted and simultaneously develop NCOs. But each first sergeant must establish his standards and brief the battalion commander and command sergeant major on the unit's daily activities and his NCODP plan.

**0530—First Call.** NCOs are present for duty. They awaken soldiers in the billets and supervise the cleaning of individual rooms.

**0600—NCO Call.** First sergeant reviews the tasks, conditions and standards for morning physical training (PT). PT instructors have been previously identified and have demonstrated they're prepared to instruct PT.

**0610—PT Formation.** First sergeant forms the company, receives his report and conducts reveille. He then announces the orders or business of the day. PT instructors are put in charge of PT. First sergeant and platoon sergeants participate in PT by acting as assistant instructors, ensuring soldiers do the exercises properly.

**0715—PT After-Action Review.** Instructors turn the formation back to the first sergeant who, in turn, announces the next formation. He then conducts a short after-action review with NCOs on the PT formation.

**0715 to 0845—Clean Up and Breakfast.** NCOs ensure that living and common areas are cleaned and that soldiers do personal hygiene and eat breakfast.

**0845—Work Call Formation.** First sergeant issues orders and directives and directs NCOs conduct in-ranks inspections. Section chiefs inspect their soldiers, ensuring they're in the proper uniform and have appropriate equipment for the day's training.

**0900—Police Call.** Platoon sergeants delegate to squad leaders and section chiefs the movement of their soldiers to appropriate police areas, and NCOs supervise police of the areas. Then junior NCOs march the soldiers to designated training areas. Senior NCOs monitor the junior NCOs, ensuring they properly march the soldiers—morning drill.

**1130—Lunch.** Junior NCOs march soldiers from the training locations to the dining facility for lunch.

**1300—Recall Formation.** First sergeant issues directives and orders. Junior NCOs march soldiers to training.

**1630—Recall Formation.** First sergeant issues directives and orders.

**1700—NCO Call.** First sergeant reviews the day's training activities and finalizes plans and schedules for the next day's training with the NCOs.

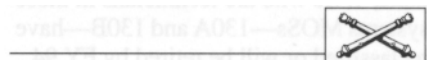


### Conclusion

The development of junior NCOs is an everyday, ongoing activity. This function of NCO development trains the junior NCO to be an organized, efficient and competent leader, ensuring he can conduct the daily activities of the organization.

All training is accomplished to standard with emphasis on "powering down" to the lowest level. The senior NCO observes, critiques and counsels the junior NCO on his leadership performance.

It's a busy day for qualified NCOs. They must run the daily activities of the organization and see that training is carried out in such a manner that it gives soldiers all the skills they'll need in combat. In that same schedule, they must develop subordinate NCOs to be qualified to follow, to take responsibility for that special trust NCOs are vested with—running the organization.



**Command Sergeant Major (CSM) Harold F. Shrewsberry is the Commandant of the NCO Academy at Fort Sill, Oklahoma. He has had six years of experience as a CSM and eight years as a First Sergeant and had combat assignments in Vietnam, the Demilitarized Zone (DMZ) in Korea and Operation Desert Storm. His previous assignment was as CSM of VII Corps Artillery, joining the Corps Artillery in Southwest Asia during Desert Storm in January of 1991 and deploying the unit back to Germany. Other CSM experience was as Community CSM of Ansbach, Germany (1st Armored Division); CSM of the 7th Infantry Division (Light) Artillery, Fort Ord, California, helping to deploy the unit to Operation Just Cause and serving as Division (Rear) CSM; and CSM of the 2d Battalion, 8th Field Artillery, also in the 7th Infantry Division.**

*Field Artillery*

### Long-Term Technology versus Short-Term Savings

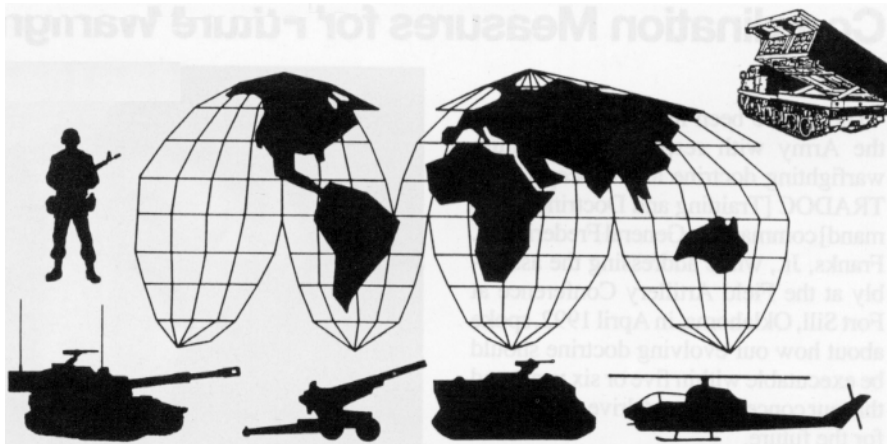
The recent downsizing of the armed forces has caused a serious reappraisal of the roles and missions of the Army and, for our specific purposes, the role of fire support. What role must fire support assume if we are to win quickly and decisively in any future conflict? And how important is technology to help ensure decisive victory compared to the money we could save in the short term?

To answer the first question, one must take a serious look at the threat, the possible regions of conflict and the political dynamics that will surround any armed intervention by the United States. I would like to briefly address each of these three parameters before continuing.

**Threat.** Much has been made of the demise of any credible threat in the current world. While this may be true at this moment, there is no reason to believe that a regional power that poses a threat to the interests of the United States will not evolve. This threat probably will use hybrid Soviet-Chinese type tactics and organizations and will be equipped with a mix of Eastern Bloc and western weapons systems and technologies. It is highly conceivable that this threat will have "smart" weapons and certain technologies that match or exceed our own.

**Regions of Conflict.** The role of the United States in NATO requires a capability to assist in the defense of Europe. Consequently, we must continue to plan for operations in this highly unlikely theater. More realistically, we must be able to conduct contingency operations any where in the world. This probably will be in a Third World country in Africa, Northeast Asia or Southwest Asia. We also must retain a capability to deploy into Central or South America. There is a common thread in all of these likely theaters. Specifically, we must move long distances, arrive ready to fight and conduct operations in a theater where the infrastructure is either limited or nonexistent.

**Political Dynamics.** This is not the domain of soldiers. There are, however, some realities that affect us. Most notable is the fact that the American public and our leadership will not accept a protracted conflict with high casualties. We must



execute swiftly, precisely and violently to bring any conflict to a quick conclusion with minimal casualties. This is the key to decisive victory. To do any less would violate the trust of the American people.

Clearly, then, the role of fire support is to arrive early, engage decisively and place the threat at risk immediately and continuously. Major General Paul E. Funk [Commanding General of the 3rd Armored Division in Operation Desert Storm] put it very succinctly when he said, "We want to kill everything we can before it comes to...[the close battle]."

This role is no different from the role of fire support in any previous conflict. The difference is one of scale. We traditionally have used criteria of *delay*, *disrupt* and *destroy* (10-20-30 percent) to quantify our defeat criteria for targets. This may no longer be sufficient. The expectation that Field Artillery (i.e. fire support) is the greatest killer on the battlefield may well demand significantly higher defeat criteria on future targets.

Accepting Major General Funk's comments as a maneuver commander's imperative, fire support must negate the threat before it ever closes into the close battle area. As a general rule of thumb, we can accomplish this by reducing regiments to battalions, battalions to companies and assisting maneuver forces in the destruction of companies. Bottom line: we must force threat maneuver forces to reconstitute and realign at least once prior to closure with our maneuver.

This is an achievable goal. We must, however, resource our soldiers, fire support coordinators and maneuver commanders with the means to accomplish it. At operational ranges. Air Force assets, Army TACMS [Army tactical missile system], and TSSAM

[tri-service stand-off attack missile] with BAT [brilliant anti-armor technology] engage and destroy regiments. In the "over-the-hill" battle, attack helicopters, MLRS [multiple launch rocket system] TGW [terminally guided warhead] and the MLRS extended-range rocket engage and destroy battalions. The close battle is fought by maneuver forces aided by MLRS rockets and cannon artillery. These munitions are meaningless, however, unless we continue to field MLRS, field Paladin M109A6 howitzer and AFAS [advanced Field Artillery system] and develop and field HIMARS [high-mobility artillery rocket system]. Concurrently, we must ensure our target acquisition and C<sup>3</sup>I [command, control, communications and intelligence] systems keep pace with our delivery systems.

Any argument that states the training and quality of our soldiers is such that it overcomes any threat is naive and negligent. Our soldiers are superlative. To deny them the necessary resources, however, is akin to denying artisans their tools.

Fire support is no panacea. It cannot replace maneuver. It can, however, greatly enhance maneuver's effectiveness while, at the same time, greatly increase the chances of maneuver's survival.

The argument presented here is one of great simplicity. The answer to the second question is that technology is key. We invest *now* in technology and, potentially, save lives in future conflicts instead of saving short-term dollars and paying for this economy with our soldiers lives some time in the future.

MAJ John A. Sorrell, FA  
Asst. TRADOC Systems Mgr.,  
Rocket and Missile Systems  
Fort Sill, OK

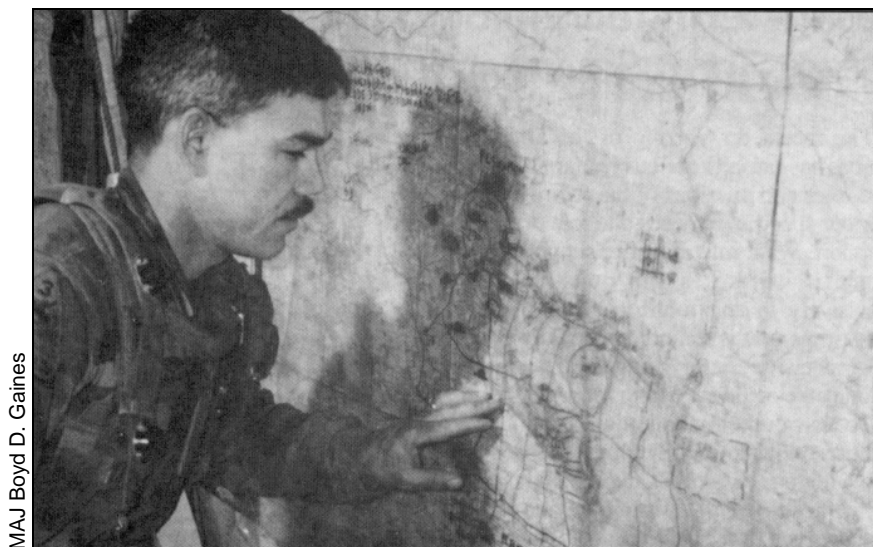
# Coordination Measures for Future Warfighting

There have been recent discussions in the Army with respect to our future warfighting doctrine and concepts. The TRADOC [Training and Doctrine Command] commander, General Frederick M. Franks, Jr., while addressing the assembly at the Field Artillery Conference at Fort Sill, Oklahoma, in April 1992, spoke about how our evolving doctrine should be executable within five or six years and that our concepts should drive technology for the future.

Major Jay F. Grandin wrote an article, "Fire Support Coordination—It's Time for a Relook," in the February 1992 issue. Major Grandin's ideas for redefining the boundary and fixing the fire support coordination line [FSCL] are particularly creative. As an extension of Major Grandin's ideas, I propose a different perspective for our battlefield control and coordination measures.

I propose future commanders coordinate the three-dimensional battlefield with three-dimensional graphics and control measures. For the most part, commanders are currently enhancing their command by controlling the three-dimensional battlefield with two-dimensional control measures.

I visualize graphics with three-dimensional passageways and conduits of forces; the conduits would be depicted by the different regions for which commands have responsibility. The sizes of the conduits would differentiate among division, corps or army commands. Color variations of the conduits would differentiate between ground component and air component commanders. These conduits may overlap with shared regions of responsibility among different branches or



MAJ Boyd D. Gaines

Future commanders should control the three-dimensional battlefield with three-dimensional graphics and control measures. Commanders are currently...controlling the three-dimensional battlefield with two-dimensional graphics.

services, as an example, for different levels of air defense. Future technology can either display these conduits simultaneously, or layered software can display only what the commander wants to see at that time.

With regard to the segmentation of battlefield responsibility for delivering close, tactical and operational fires, some senior Army leaders prefer to think in terms of simultaneous fires and battles. This simultaneous and continuous way of thinking should be magnified in the Army's leader development schools. I suggest that some of our schools could benefit from what is taught and how it's being taught at the Federal Aviation Administration's Air Traffic Controller school in Oklahoma City, Oklahoma. Air traffic controllers are trained to control

simultaneous operations in three dimensions of space. To be more precise, air traffic controllers work in the four dimensions of space-time, where physical events and objects are located by a system of one temporal and three spatial coordinates. I believe the type of training required to track and control aircraft in congested skies can be exploited to enhance the control of fires by the Field Artillery.

In closing, I endeavor to leave room for creative adaptation. To use General Franks' words, the ideas presented are intended to help "change intellectual directions" and entreat your "collective wisdom."

CPT Victor P. Wu, FA  
TRADOC Analysis Command  
Fort Leavenworth, KS

## Response to Incoming "Fire Support for the Divisional Cavalry Squadron"

Captain Sean G. Musgrove's letter to the editor "Fire Support for the Divisional Cavalry Squadron" [June 1992] addresses a subject of merit regarding fire support. Each of his remedies is valid and plausible; however, the real problem stems from the maneuver community rather than from fire supporters. Yes, we, as fire supporters, must advise commanders on how best to employ fire support assets as

an integral part of their combat power, but commanders employing cavalry assets must think like *combined arms* commanders rather than *maneuver* commanders.

Too often, the maneuver commander and his staff conduct the command estimate process (CEP) considering only maneuver and including fire support as an afterthought. If the plan is war-gamed properly (considering all battlefield

operating systems), the staff will identify critical times and places on the battlefield to synchronize limited assets and maximize combat power. The staff can identify limitations, such as the critical need for fire support by a divisional cavalry squadron, and plan the support as required. The allocation of assets (developed during the war-gaming process) allows the combined arms commander the flexibility to influence

the battle where he deems most critical.

Every military man believes "more is better." In our current political environment, *less* is what we have. In light of this fact, we must fight smarter with what we have. It's incumbent upon us to allocate our resources adequately.

To resource the cavalry squadron with fire support, the division should allocate

the resources it has more efficiently. It may do this by organizing Field Artillery (FA) for combat most effectively, allocating air support, identifying priority targets, assigning non-standard FA tactical missions, using Army aviation or other methods. Ingenuity is the common thread in the innovative use of limited resources.

Like everyone else, I want more artillery for the force. But reality tells me we need to be smarter about how we employ what we have.

MAJ Thomas A. Gray, FA  
Small Group Leader  
Fire Support and Combined Arms  
Operations Dept.  
Field Artillery School, Fort Sill, OK

## Response to Incoming "FIST-V Employment"

The letter addressing Option 4 of employment of the fire support team vehicle (FIST-V) by First Lieutenant Brent M. Parker, [June 1992] is a thought-provoking one. There have been times when a task force fire support officer (TF FSO) wished he could have done just what is covered in the letter. But nothing in the past has stopped the TF FSO from proposing this method of employment to the task force commander.

The fire support structure is attached to maneuver units from artillery units. It's a matter of style and tactics, techniques and procedures (TTPs) that decide the way to use the FIST. The FIST is attached to the company/team by the maneuver headquarters. It can always task organize based on METT-T [mission, enemy, terrain, troops and time available].

Should Option 4 be used all the time? I cannot say. In a situation where fire support is so critical to the maneuver plan that all the assets need to be centrally controlled, then the option should be considered.

Using this option has several disadvantages. In the area of command and control, who really controls those

company FSOs? Do they respond to the company/team commander or the TF FSO?

Who's going to provide service support to the FIST and the FIST-V? Expecting the headquarters company commander of the maneuver task force to do it is not a solution.

In Option 4, the TF FSO would have to control assets that support the FIST-V and the platoon forward observers. Is this what we want the TF FSO or his sergeant to be concerned with? With this method of employment, we are asking even more of our TF FSOs.

The acceptance of Option 4 as a normal course of operation will limit who can become the battalion TF FSO. There's no other choice about who should be the TF FSO—a captain with command experience who can see the battlefield and operate on a par with the maneuver company and team commanders.

The TF FSO would, in fact, become a combat leader; he would be charged with supporting the FIST-V. He would have to know tactics and fire support and the capabilities of the fire support assets

better than ever because he would bring to the TF a system that amasses destructive firepower and can control surgically precise weapons.

I'm glad young officers are looking for ways to improve the artillery. The author had insight and the ability to propose a *solution* to a problem rather than getting tangled up in complaining about a perceived shortcoming in the artillery.

Our TTP manuals are good manuals that address most situations. They are sound and give guidance to solve problems. But the artillerymen who go beyond the manuals are the ones who will keep the artillery effective on the battlefield. We, as professionals, can never allow the mind-stagnating feeling that the manuals are the final word on how to operate. They are tools and guides, but METT-T and individual thought will always be the final word.

MAJ Timothy M. Moran, FA  
Small Group Instructor  
Fire Support and Combined Arms  
Operations Dept.  
Field Artillery School, Fort Sill, OK

## Field Input for FM 25-101

The Combined Arms Command-Training (CAC-TNG) at Fort Leavenworth, Kansas, is looking for suggestions on how to improve *FM 25-101 Battle Focused Training*. As the proponent for Army training management doctrine in the manual, CAC-TNG wants revisions before the next scheduled rewrite. Each suggestion should include the specific page and paragraph and the specific recommendation, to include textual changes or additions.

Those wishing to make recommendations should provide comments to the

Deputy Commanding General for Training, Combined Arms Command (CAC), ATTN:ATZL-CTT, Fort Leavenworth, Kansas 66027. Comments may be telefaxed to DSN 552-4458 or (913) 684-4458. If you have questions, contact Major Ken Burke or Captain Bill Hedges at DSN 552-3919 or (913) 684-3919.

Colonel Dwight B. Dickson, Jr.  
Director, Combat Arms Training  
Integration and Development  
Directorate  
CAC, Fort Leavenworth, KS





## An Introduction:

# USAREUR

*in*

## Transition

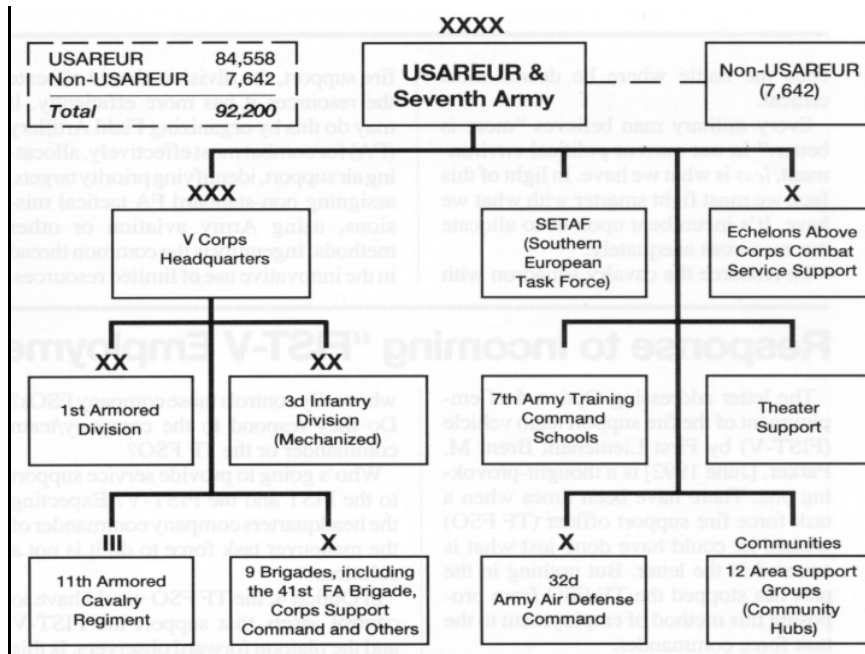
The US Army Europe (USAREUR) has redefined its purpose and is reducing its size by 58 percent, completely reorganizing its structure, revising its fighting strategy and upgrading its training—all to be completed by the end of FY 93.

Driving many of those internal changes are other history-making events that USAREUR either has participated in or has been witness to. USAREUR has complied with the terms of the Intermediate-Range Nuclear Forces (INF) and Conventional Forces in Europe (CFE) Treaties; took time out to send 85,000 soldiers to a major war in Southwest Asia; cheered while Germany, the host nation of most USAREUR units for more than 40 years, reunified; and cautiously watched as the largest, most powerful threat the US Army has ever faced, the Soviet Union, dissolved. And all happened in the last four years—most in the past two.

Scholars will write dissertations about the military, economic and political ramifications impacting on USAREUR—on the entire US Army—of any single event listed. And because of the speed with which those massive changes came, even the most astute scholar won't be able to chart all the ramifications for years to come.

### Drawing Down USAREUR

With all these international events intertwined, USAREUR continues its drawdown and reorganization. Its original charter was to draw down from 217,000 soldiers with 259,000 family members to 92,200 soldiers with 110,000 family members and reconfigure the force in five years—starting in FY 90 and going through FY 94. But fiscal demands



The End State of USAREUR in FY 93. Since September 1990, USAREUR will have reduced its number of soldiers from 217,000 to 92,200, a 58 percent reduction. The 92,200 soldiers remaining constitute the equivalent of 29 brigades. In addition, USAREUR will include almost 34,000 civilian employees.

caused the Congress to speed up the drawdown to 92,200 soldiers in FY 93.

The impact? In FY 92 alone, USAREUR is projected to rotate almost 73,000 soldiers out of theater (with 91,000 family members, 21,000 family pets and almost 30,000 automobiles). When USAREUR had its drawdown programs and support structures set up and "greased," it began averaging 500 soldiers a workday leaving Europe for the last half of FY 92.

USAREUR will draw down 125 battalions, rotating 33 of them as unit packages back to the US; turn back 157 installations to host nations; and reorganize into 12 area support groups (community hubs)—down from 29 communities in September 1990—all in FY 92.

### Taking Care of Soldiers

While the drawdown is going on, USAREUR will train, maintain and take care of soldiers, many of whom are leaving the theater. When the CFE Treaty negotiations were going on, USAREUR knew they would have to take forces out of Europe. So they began to develop plans to do that—all the way from tracking the number of family pets that had to be moved to ensuring the soldier and his family would be cared for at their new stations. They expected the move-out process

- VII Corps Headquarters - Inactivated
- VII Corps Artillery Headquarters - Inactivated
- 17th FA Brigade - Moved to Fort Sill, OK, III Corps Artillery
- 72d FA Brigade - Inactivated
- 210th FA Brigade - Flag Moved to Fort Lewis, WA
- 3d Armored Division - Inactivated
- 8th Infantry Division (Mechanized) - Inactivated
- 2d Armored Cavalry Regiment (ACR) - Colors Moved to Fort Lewis with the 199th Separate Infantry Brigade to be Reflagged the 2d Cavalry Regiment (Light)
- 56th FA Command - Inactivated
- 59th Ordnance Brigade - Inactivated (Includes: 294th, 512th, 552d, 557th, and 570th Artillery Groups)
- 528th, 558th and 559th Artillery Groups of the Southern European Task Force (SETAF) - Inactivated
- 1st Infantry Division (Forward) - Inactivated
- 2d Armored Division (Forward) - Inactivated
- 42d FA Brigade - Moving to Fort Polk, LA, in September 1992

Major Unit Reductions in USAREUR. The 41st FA Brigade, the only one of the five FA brigades to remain in USAREUR, has five MLRS battalions and is part of V Corps Artillery.

to evolve into a steady stream of departures—very demanding but something the support structure could handle.

But because of the accelerated drawdown, USAREUR had to reach its end state in FY 93, two years earlier than previously planned. This caused, for example, the 1st Armored Division to increase its drawdown from 200 to 400 soldiers per week. In seven months, the division moved 10,000 soldiers out (not

including family members), which was about two and one-half times the normal turnover rate.

To accomplish such massive move-outs in a sensitive manner, USAREUR had to have comprehensive out-sponsor programs to individually manage each soldier. They made it a battalion-level responsibility, a leader responsibility, to ensure every soldier leaving had someone help him through the process. The accelerated

drawdown was a challenge, but USAREUR set it up like a military operation with an operations order and full staffing.

They have checklists and coordination meetings ad infinitum. They know how many cars have to be moved, which meet US specs and what is happening to the cars if they don't meet US specs. They knew how many dependents were in school and had to complete classes until what date. They know how many soldiers are married to or are about to be married to local nationals and how many have children born in a foreign country—all requiring special international paper work with the process required to start months in advance. Of course, USAREUR tracks the more routine permanent change of station (PCS) details, such as orders, transportation, household goods shipments, sponsorships and accommodations at the receiving stations, etc.

The Army takes care of its own—certainly in Europe—better than any institution in the world. And as soldiers leave the service, for one reason or another, USAREUR takes tender care of them and shows them what their possible future prospects are through programs such as the Army Career Alumni Program (ACAP). USAREUR—and the rest of the Army—doesn't just issue "pink slips" like other institutions. They transition people carefully and with a great deal of sensitivity.

## Training and Warfighting

This section of *Field Artillery* takes a look at the changing face of USAREUR. General Crosbie E. Saint, who until last month had commanded USAREUR and Seventh Army for four years, tells us in an interview where USAREUR is today and where it's going. Taken from interviews with his two division commanders, Major Generals Richard F. Keller and William M. Boice, two articles discuss training and warfighting, the USAREUR battle focus.

The command philosophy in USAREUR is clear: if you're not on a mission or drawing down, you're training for war. And then you train some more.

*Patricia Slayden Hollis*  
Managing Editor



Types of Battalions	FY 90	FY 93	Percent of Reductions
Infantry	26	12*	54%
Armor	26	10**	62%
Division Cavalry Squadron	4	2***	50%
Armored Cavalry Squadron	6	3	50%
Field Artillery (Total)	38	11	71%
M109/110 Howitzers	29	6	80%
MLRS	3	5	+66%
Pershing I/II	2	0	100%
Lance	4	0	100%
Attack Helicopters****	7	9	+28%
Engineer	13	10	23%
Air Defense Artillery	17	9	48%
<b>Totals</b>	<b>137</b>	<b>66</b>	<b>52%</b>

\* Includes two in the Berlin Brigade.  
 \*\* Includes 6th Battalion, 40th Armor, a Bn(-) in Berlin.  
 \*\*\* Squadrons have an additional ground troop plus 27 M1A1 tanks in each as a CINCUSAREUR initiative.  
 \*\*\*\* Includes ACR regimental aviation squadrons.

USAREUR Drawdown by Battalions. By the end of FY 93, USAREUR will have drawn down by 71 "maneuver" battalions in two fiscal years. Although the highest reduction percentage by type listed is Field Artillery (71%), the reduction includes 8-inch howitzer and Pershing and Lance missile battalions previously designated for drawdown. The 11 FA battalions remaining include five MLRS battalions, which gives USAREUR an actual increase in FA firepower for the end-state force structure.

Weapons	FY 89	FY 93	Percent Remaining
M109 Howitzers	464	168	36%
M110 Howitzers	288	0	0%
MLRS*	90	135	150%
M1 Tanks	1,728	760	44%
M2/M3 Bradley Fighting Vehicles	1,050	680	65%
AH-64 Helicopters*	90	162	180%
Patriot Launchers*	144	192	133%

\*The number of these weapons systems increase by FY 93 because the systems were being fielded.

USAREUR's Major Weapons Systems Remaining in Units. These figures don't include weapons systems in prepositioning of materiel configured to unit sets (POMCUS), at training facilities or other such locations. The exact number of Patriot missiles left in units is classified.

General Crosbie E. Saint, Former Commander-in-Chief of US Army Europe and Seventh Army

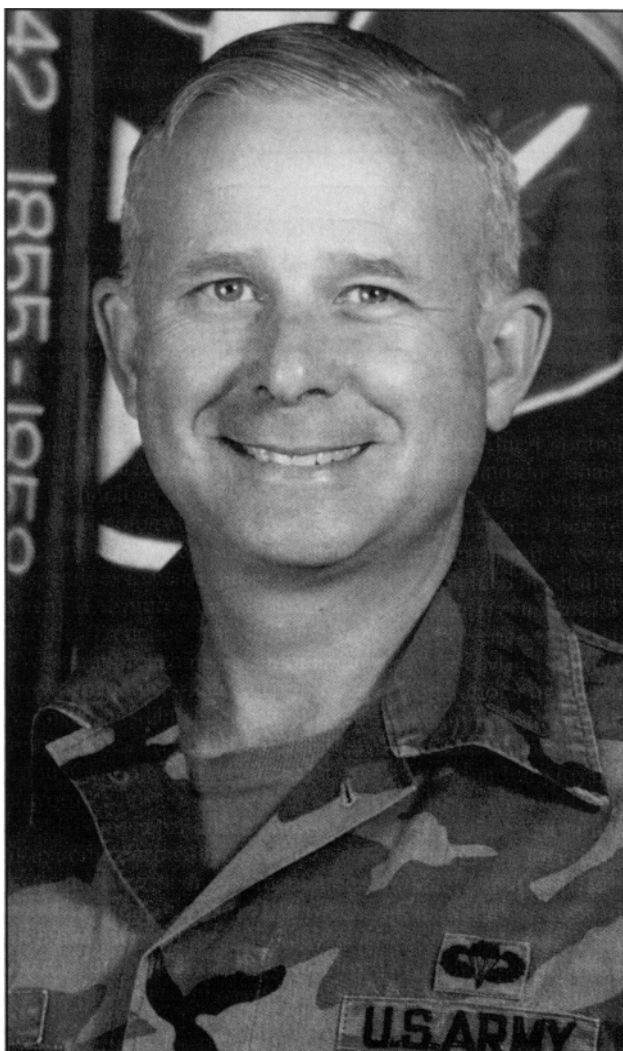
## *Making History*

# Changing the Face of USAREUR

Interview by Patricia Slayden Hollis, Managing Editor



**“ One of the most significant changes in USAREUR is our percentage of combat multipliers. We don't have as many forces on the ground, but we kept a lot of combat multipliers. ”**



*With the dissolution of the Soviet Union and the end of the Cold War, how would you characterize the purpose of the US Army forces in Europe? What kinds of threats must USAREUR [US Army Europe] be prepared to face?*

USAREUR's purpose has changed from defending a piece of ground and the Fulda Gap against "the hordes"—a threat we knew and understood—to being a regional force prepared to go anywhere,

anytime to perform a variety of missions. Our missions range from giving shots to people in Botswana to sending a corps to Desert Storm. We've helped the Kurds in a security mission in Iraq and are training some 1,500 different allied officers and soldiers in US Army operations. That's quite a range of missions.

In terms of USAREUR's organization, nothing's the same. Though a lot of people don't realize it, we've completely reorganized

in the past several years to accomplish the new tasks.

As a matter of fact, before Desert Storm, we changed the way we fight—eliminated the GDP [general defense plan] approach. If you look back at REFORGER 90 [return of forces to Germany 1990], you'll see VII Corps basically fought as it later did in the desert. It had the long road march, the attack—all the same operations. During Desert Storm, most VII Corps staff officers could have said, "I've been through this before."

Now, as a regional force, we could face threats ranging the entire spectrum. For example, we could be conducting an exercise with a country facing some external threat and be there when the threat materializes. To meet and beat any threat on the spectrum, we need a variety of heavy combinations, SOF [special operations forces] and light forces.

One of the most significant changes in USAREUR is our percentage of combat multipliers. We don't have as many forces on the ground, but we kept a lot of combat multipliers. For example, we attached a battalion of MLRS [multiple launch rocket system] to each division. Though we took the

8-inch howitzer units out of USAREUR, one SPLL [MLRS self-propelled launcher loader] equals an 8-inch battalion. [One SPLL fires more dual-purpose improved conventional munition (DPICM) submunitions than an 8-inch battalion does firing a volley of DPICM.]

We kept nine Apache [helicopter] battalions—that's a lot of combat aviation. We also kept an extra MSE [mobile subscriber equipment] battalion, for example,

*Field Artillery*



## INTERVIEW

to have the command and control to go with the new configuration. We really made the most of less money in the budget—now get the most bang for the buck.

So whatever amount of money we have to support a force, then that's the size force we'll configure. Whatever size force we configure needs to be able to do the job you give it. And though we've taken advantage of the sophistication and technical capabilities of our equipment, you can't compensate for everything as you draw down—you lose the capability to do a lot of things you used to be able to do.

*In the drawdown of USAREUR, the Field Artillery force structure has been reduced proportionately more than other combat arms—from five separate brigades to one. That leaves the corps commander a less flexible force [one brigade with five MLRS battalions]. What level of fire support is "about right," and how do you envision reinforcing an armored cavalry regiment [ACR]?*

First, I disagree that the corps commander has a less flexible force. His Field Artillery firepower has increased, not decreased. There are fewer artillery units but more firepower for the force remaining.

Before, we had extra Field Artillery brigades because, for instance, we gave Field Artillery brigade support to German corps. We also had a lot of 8-inch artillery. We needed that level of command and control for the amount of reinforcing fires we had to provide. And we didn't have MLRS and Army TACMS [tactical missile system] in those days.

But the situation has changed. When you have MLRS and Army TACMS, you don't have to move units to get in range of the enemy like you had to before. You can stand back and "reach out and touch" the enemy a long way away. Therefore, you can shift fires significantly more easily than before. If you look at the number of MLRS battalions USAREUR has now versus the equivalent in 8-inch battalions, we have drastically increased our firepower.

One of the issues then is—and if you have three people discussing it, you'll get four opinions—do you need more tube artillery in the corps artillery to back up the cavalry? I said, "No." If we gave it all the extra assets, the cavalry wouldn't look like the cavalry. It has to get back to doing

what it was intended to do—that's conduct reconnaissance and security operations. The cavalry isn't a heavy force that goes around looking for big trouble. It must be able to protect itself while on the mission and tell the heavy force where the enemy is. That's a different mentality—a change from seeing the cavalry on the East German border as the initial covering force.

In terms of providing close support, I agree MLRS has some shortcomings—for example, its minimum range. On the other hand that's why you have a 155-mm battery in each cavalry squadron.

The cavalry regiment can call on MLRS or Army TACMS. And we put Apaches in the regiment, replacing the Cobras. The amount of firepower the cavalry has to do what it's supposed to do has gone up rather than down. What "traps" you is the configuration isn't what you're used to.

*Joint precision interdiction is replacing the follow-on forces attack [FOFA] doctrine in NATO and is influencing concepts throughout the Army. Please explain what joint precision interdiction is and its impact on USAREUR.*

Joint precision interdiction is the use of precision fire systems to put the effects on a specific target rather than a specific area. So, we've gone from "obliterating the grid square" to surgically taking out a target—could be a moving target. That's a significant difference in capability.

Joint precision interdiction and FOFA are related. When you get the precision capabilities, you can still have follow-on forces attack. The difference is most people think of attacking the second echelon, not attacking the *uncommitted* forces.

We used to say we were going to attack an echelon that was coming like a wave. Now we're saying we may or may not have a wave, and whether it's a wave or not, we need to concentrate on attacking a particular enemy "module" to achieve the most crippling effect. Because you don't have enough systems to wipe out the enemy, you have to select high-payoff targets—which we've been doing for a long time.

There really isn't a difference in philosophy in that you either go after an enemy's weapons or you go after his functional systems to unravel his cohesion. That's true whether you take out his air defense systems to give you air superiority or take out his artillery fire control systems, so he can't control his batteries. So you kill his different modules, as opposed to killing everything that comes over the hill.

*What impact does the multinational corps force [MNCF] concept for fighting in Europe have on operations in USAREUR? The advantages and disadvantages?*

As the size of our multinational forces have drawn down, the number of people available to man a corps has gone down. So several countries form a corps.



General Saint receives a briefing on the move with a brigade commander of the 10th Mountain Division (Light) during a training exercise at the CMTC.



## INTERVIEW



On the firing range at Grafenwoehr, General Saint talks with soldiers of the 3d Infantry Division (Mechanized).

We haven't decided exactly what one [MNCF] looks like. But we have more experience with one than any other command in the Army because we had one with the VII [US] Corps and the 12th [German] Panzer Division. But our corps has inactivated. We're engaged in discussions about what this new multinational corps should look like, from the German-American point of view.

In the multinational corps, the advantage is you operate in a coalition environment, so if you're attacked, the aggressor isn't just attacking one country, but more than one. As a spinoff of the interoperability training and coordination you do with your coalition forces, your confidence in your allies significantly increases. If you operate as an integrated force instead of side-by-side, you know more about your allies—your feelings about their capabilities become more precise, rather than unknown.

We're going to have to figure out how to make our multinational corps force package more self-sufficient. In our doctrine, we don't operate as less than a corps—that's the way we built it. So if you take pieces of the corps and send them off, then what do you do about, say, the fire support system, if it isn't part of the basic new organization? Because our allies don't have the same systems we have, if you send a US division off, where does the corps fire support system attach itself in the multinational corps? There's no corps artillery—who does this fire support system work for? The division commander? You're either going to have to incorporate the fire support system into the division or

come up with some other system to provide the necessary support and command and control.

You can take a US division and put it in an allied corps, but you can't take a US brigade and put it in an allied division. The closest we come to a truly independent brigade is a separate armored brigade, but it doesn't have any reinforcing artillery. We'd have to rely on an ally to provide reinforcing artillery. But, then, who commands and controls the fire support system?

So when we send a force package from the corps to be part of a multinational force, we have to create an organization to take care of it. And at the same time, as much as possible, we must reduce the "ad hockery" associated with creating such an organization, the ad hockery that causes it to operate differently than the rest of the US Army.

In terms of preparing to serve under a non-US commander, our units train as they've always trained. Countries operate differently—have different equipment, doctrine, procedures. So if a US unit had an allied commander, the unit would accomplish the missions using US tactics, techniques and procedures. For example, a German unit conducts a road march differently than a US or Dutch unit does, but the road march has to come together. The commander has to understand those differences because he can't retrain the different international units. That's why you don't have multinational force packages at the lower levels.

These are things we have to work out. The problem is figuring out how to operate

with allies who think differently, are organized differently and, in general, speak a different language than we do—not easy.

*With massive changes in Europe—economic and political instability, the redefinition of the threat, the expanded role of USAREUR in regional operations, the downsizing and reorganization of the Army and USAREUR—how do you manage all that change?*

By keeping my eye on what's important. By providing the resources people need to get the job done so they're not scrimping, which causes them to do dumb things, and letting our leaders get on with the tasks at hand. By showing them you have confidence in them.

In USAREUR, we don't assign multiple missions. You're either training to go to war or you're standing down. Nothing in the middle.

The policy in USAREUR is that 150 days out from your unit's inactivation, you do nothing but stand down—except for individual training, such as CTTs [common task tests], marksmanship and PT [physical training]. Drawing down is like mowing the grass; once you get started, you might as well go on and get it over with, and very few like it.

*What's the criteria for choosing one of many similarly capable units to keep in USAREUR, reconfigure, move, inactivate, send back to the US—how do you decide what's going to happen where, with all the political changes going on?*

We built from the bottom up to create the organization we ultimately wanted to have. We came up with about 15 criteria for choosing the units to be in the reorganized USAREUR. The criteria was based on the types of units at the different force levels and their locations in USAREUR, without regard for their mother organizations. For instance, we chose the brigades that stayed, not by their affiliations with the divisions that stayed, but by the quality of their locations—their living and training conditions and tactical and operational mobility from those locations.

So we started with a blank sheet of paper and built the new organization to take advantage of the best places, the best support systems, the best training facilities, the best rail and road nets, the best relationships with the local Germans and



the amount of money already invested by Americans in those locations. Our philosophy of reorganization included reducing or eliminating "duffle-bag drag"—not moving a unit from one kaserne to another unless there was a significant advantage to be gained.

One of my ultimate objectives is to provide sufficient housing for everyone authorized housing in USAREUR. The same is true with having enough medical and other services. So we've tried to fix things that have been less desirable for the last 40 years.

In some cases we're going to be eminently successful; in other cases, we won't be as successful as I'd like. But it's going to be better later than it is now.

And my guidance down doesn't change. In other words, the units have their missions, and I hand out my budget for the next year every June. Now, that doesn't mean I have the money. But what it does mean is that units have a stable budget environment. My job is to get them the resources to do the things I tell them to do. It isn't their jobs to try to figure out how to get more resources. That causes them to divert their attention from their real jobs. So, I get the ulcer. It all seems to work out.

*In drawing down USAREUR from 217,000 military in 1990 to 92,200 in 1993, what unique requirements do you have to take care of soldiers as they move out?*

We're averaging about 500 soldiers a day leaving Europe—that's not including family members—which makes many of the things we're doing unique. First, the most difficult part of the drawdown is maintaining facilities and services until the last soldier leaves. When you're inactivating a unit, you also may be closing the kaserne, the installation or the entire community. So, if you're not careful, the support mechanisms can be gone before the people are.

Drawing down a kaserne is sort of like painting a floor in a house. You have to start at the far end and paint yourself out the door. But the "whole system" doesn't stop until you get out the door.

That costs money. It costs me money to keep a child care center open at less than its efficient operation, and I have to get that money from some place. I keep the movie theater, the PX, the laundry open—all those kinds of services. To keep the commissary open costs extraordinary amounts of money. We go through a

**“ We're averaging about 500 soldiers a day leaving Europe—that's not including family members—which makes many of the things we're doing unique. ”**

pretty interesting drill to make sure our people don't feel abandoned.

Unless there are unusual circumstances, the commander and command sergeant major are reassigned last. They stay and "turn off the lights" in the kaserne. That way you don't have the system starting "to pick at the bones"; the leaders are still there, and they aren't going to let that happen.

And the commander has a significant amount of power. For example, if he has a soldier on orders with a specific report date and either for the efficiency of the drawdown or because the soldier has a personal problem that has come up, the battalion commander has the authority to delay the soldier's going. Then his entire chain of command, right up to the CINCUSAREUR, backs him up.

Because each unit and its soldiers are unique, we only provide the commanders guidelines and policies: "Here's what you're supposed to do." If a commander can't do that, he "raises his hand" to me and we adjudicate what he will and won't do. That's about the only way we could get the job done.

We have a rather elaborate process we go through drawing down and reorganizing USAREUR. It's sort of an antibody to bureaucracy. By definition, bureaucracy maintains the status quo—you do everything according to established rules. But what we're doing in USAREUR has no rules; we're having to make them up as we go along.

Our job is to maintain a unit's readiness until it draws down, take care of soldiers and their families, get the equipment where it's supposed to go and clean out the kaserne—all in a short period of time. And in one year of drawdown, we can't afford to ruin 40 years of German goodwill.

So, as I tell Congressmen, we're in constant combat with the normal system because what we're doing is not normal.

*You have instituted a multi-echeloned, battle-focused training strategy in*

*USAREUR with specific performance "gates" units must pass through to move on to the next level. It starts with individual training in weekly Sergeant's Time, goes through Grafenwoehr densities to meet firing standards outlined in tables and culminates in a force-on-force Combat Maneuver Training Center [CMTTC, Hohenfels, Germany] rotation. How effective is this strategy?*

Very. The gates units go through have raised the complexity of "battle" at the CMTTC—units are more prepared to soiree with the OPFOR [opposing force]. The strategy teaches leadership skills at the different levels and makes the most of simulations.

Now trainers, simulations, etc., aren't perfect. You could never rely solely on them for training. At some point, you have to go out and fire and maneuver the tank or howitzer—live-fire, hands-on. But operating equipment is very expensive. So, if you use simulators and save money, then you can roll that money over into better training.

For example, I pay civilians to run the ranges, so soldiers can spend more time firing. The mentality used to be that a real macho guy pulls his own targets. That's a dumb guy, too. It's worth it to spend the money for civilians and raise training productivity.

*With all the downsizing and the voluntary and involuntary separations or retirements, how do you ameliorate the effects on the soldiers? How do you keep the morale up?*

It's hard. You keep morale up by demonstrating to soldiers they still have a mission. I have people all over Europe deployed on various missions, so life in USAREUR hasn't slowed down.

You make sure soldiers understand they are quality—the best the Army's ever had. And those who are leaving, you make sure they leave with dignity—you don't rush them out the door and forget them.

The glue that holds us together is the training program—whether it's Sergeant's Time for five hours every week or going to Grafenwoehr [Training Area] twice a year or the CMTC once a year. Every combat [Infantry, Armor, Field Artillery, Attack Helicopter, Engineer and Air Defense Artillery] battalion in USAREUR goes to Hohenfels about once a year.

When a unit completes a rotation or density, it can't "back off" from training and relax for a while—more is coming and in the not too distant future. That keeps units torqued up.

Some newspaper reporters went to Hohenfels and talked to soldiers in a rotation there who were tired and dirty from "war." The reporters asked one, "What keeps you going?" He answered, "Well, I want to do better than the other company, and I want to beat the OPFOR. I also need to meet the USAREUR gunnery standards."

Soldiers in USAREUR don't have time to sit around feeling sorry for themselves. They train; and when they're through with that, they train some more. They are good, they are challenged and they know it.

*Issues you raised about synchronizing all operating systems on the battlefield to make the most of fires and maneuver led to the TRADOC-sponsored initiative "Fighting with Fires." Would you explain the synchronization fine tuning our Army needs and tell how you'd go about it?*

We don't do a good job of teaching the commander what the object of the exercise is. We teach him some of the mechanical pieces of the exercise, but he doesn't understand the big picture of his battle. For example, at the CMTC, a company commander was practicing for an upcoming battle.



General Saint receives a tactical briefing on Exercise Dragon Hammar held in Italy and Sardinia, May 1992. To General Saint's left is former V Corps Deputy Commander, now V Corps Commander, MG Jerry R. Rutherford and former V Corps Commander, now CINC USAREUR General David M. Maddox.

I asked, "What are you doing?"

He said, "Well, I'm going to put these soldiers *here* and these *there* and I'm going to do *this*."

"What's the object of the exercise?" I could tell from his face nobody had ever asked him what he was trying to do. So I said, "The object of the exercise is to bring all your fires to bear at *this* point on the ground out in front of you so you can turn the fires on and off when you have an enemy there. That's what you're trying to do. And when you finish that, I want you to be able to bring all your fires to bear on a moving point. Then, do it at night on a moving target." That's a very complex mental process.

I talked to another soldier at the CMTC who had just charged an objective. I quizzed him about calling in artillery and making the most of the firepower available to him before he charged. I asked him what his criteria was for deciding to do a frontal assault. Well, he didn't have any—no one had ever explained that to him.

I said, "Unless you absolutely have to, the only reason you charge an objective is to 'collect the booty.' Otherwise, you risk

getting a posthumous silver star when you could have gotten a bronze star for achievement and lived to fight another day." There's a significant difference in the mind set here—making the most of fires the farthest out. And that's true, whatever the source of fires: a tank, a TOW [tube-launched, optically tracked, wire-guided missile], artillery, etc.

Using simulations has caused a monumental jump in commanders and staffs' understanding of this mental process. In simulations, you can practice fighting with time, distance, size of your force, type of systems, terrain, enemy, etc., variations that we never could practice before, except theoretically. Simulations tend to drive home the "object of the exercise."

The Army has improved command and control with the MSE, which has helped the commander synchronize his systems on the battlefield. MSE is good, but it isn't quite there yet. I'm optimistic though.

Then we must help the Field Artillery, Infantry and Armor Schools teach Redlegs and the maneuver community that they have to operate and adjust together to fit the enemy situation. You don't just make the plan and hope the enemy does what you predict. We do this in units, by simulation and at our CMTC.

And the fire plan is part maneuver—the artillery is going to have to maneuver fires on the battlefield rapidly to be most effective against targets in such a rapid moving situation. We haven't really considered the fire plan as part maneuver.

This is why I'm adamant—and a lot of people disagree—that the fire support coordinator never be farther than an arm's reach away from the commander. Otherwise, you have two different battles going

---

**“ Unless you absolutely have to, the only reason you charge an objective is to 'collect the booty.' Otherwise, you risk getting a posthumous silver star when you could have gotten a bronze star for achievement and lived to fight another day. ”**

---



## INTERVIEW

on. One may be preplanned, but the enemy's not following it. If the fire support coordinator isn't beside the commander, how does he know to adjust—know what the commander's going to do next? We're getting better at that—still not great though.

*What is your vision of what USAREUR will look like in FY94?*

It will have different faces and different facets. From a training point of view, units will have a little more time—won't be quite so rushed—at Grafenwoehr and Hohenfels. They'll have more chances to drill, live fire and maneuver.

Soldiers should be less concerned about whether their families are taken care of. Moving toward our end state, we're reorganizing into hub or mega communities, providing access to more comprehensive services for families. We've also retained a number of barracks to take care of single soldiers on a par with married soldiers—excellent quality barracks.

But improving the single soldier's life isn't just upgrading facilities and services, it's also a leadership issue. In USAREUR, we treat the single soldier as a responsible adult. If a soldier can't get up in the morning, if he needs a sergeant to go down the hall and wake him up, then he's not a responsible adult, and he's not the kind of soldier we need in the Army.

Our smaller Army is going to fight in small groups at distances from other organizations. With independent actions required in war, we can't afford to have soldiers who have to have sergeants standing behind them all the time. Other armies that don't have disciplined, responsible soldiers have to fight an entirely different way—fight as a mass.

*By the year 2000, what does the Army need to change to fight and win quickly, anywhere in the world with minimum casualties in short-notice, highly mobile warfare against a sophisticated enemy?*

On that battlefield, we're going to have space, lots of movement and islands of very violent conflict with many of those islands in combat at the same time. It will be total chaos—you won't know if you're winning or losing. All leaders and soldiers are going to be under great stress.

Time will be critical on that battlefield. The Army needs to increase the likelihood of hitting targets in a very short

**“The army that can adjust to change the quickest is the one that'll win the war.”**

amount of time. We have to move faster, bring fires to bear faster. The army that can adjust to change the quickest is the one that'll win the war.

We need to go through each weapon system and cut down its inaccuracies and the amount of time it takes to fire it. For instance, on a tank, the biggest problem is we have to have cross hairs to sight on the target. It may take five seconds to sight those cross hairs accurately—a long time when the enemy is trying to kill you. We need to be able to look in the general direction, punch a button causing the sight to automatically lock on the target and pull the trigger.

We need to increase our efficiency in taking out the enemy before he takes us out.

Next, we have to learn to fight out of sight of the enemy. Throughout history, we kept inventing more sophisticated weapons to keep from getting "blood on our tunics." We didn't want the enemy close enough to get us. We went from clubs, to bows and arrows and so on to get out of harm's way and do the most damage the farthest out. We have a lot of high-tech systems in the inventory and under development that will enable us to fight out of sight, so we won't come face-to-face with the enemy until it's under our terms.

We're not doing as good a job as we might of improving individual systems because we're always in the "star wars" department. I should have been more of an advocate. For instance, there's a big move afoot to put data buses in our vehicles to rapidly transmit information. The concept is we'll have greater situational awareness. I agree to all that. But if you haven't improved your gun systems, you could have great information and lose the battle. We have to work on both capabilities at the same time.

And we need to do a better job of developing units as integrated packages. Let me give you an example. Other than the

Commandant of the Field Artillery School, there's no high-ranking proponent for the artillery battalion, per se. Name me the high-ranking officer in the Pentagon interested in the artillery battalion as an organization...or the infantry or armor battalion? There aren't any. So we buy pieces of an artillery battalion and ask the Artillery School to put them together. We buy a high-tech weapons system and then get a 2 1/2 ton truck to support it. With such piecemeal procurement, we don't get a battalion package synergistic effect.

The Army needs to figure out a way to design and field units as totally integrated packages, as opposed to piecemeal. The Navy buys an entire ship at one time. Though the circumstances are different, the thought process the Navy goes through to buy that "package" is an important process for the Army. I am at fault as a member of the Army leadership; I'm confident that those who are coming on can address this issue.

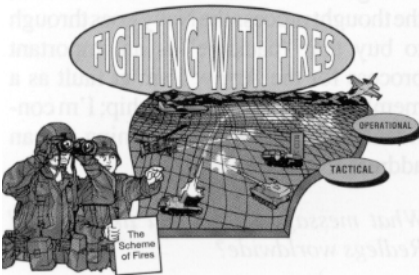
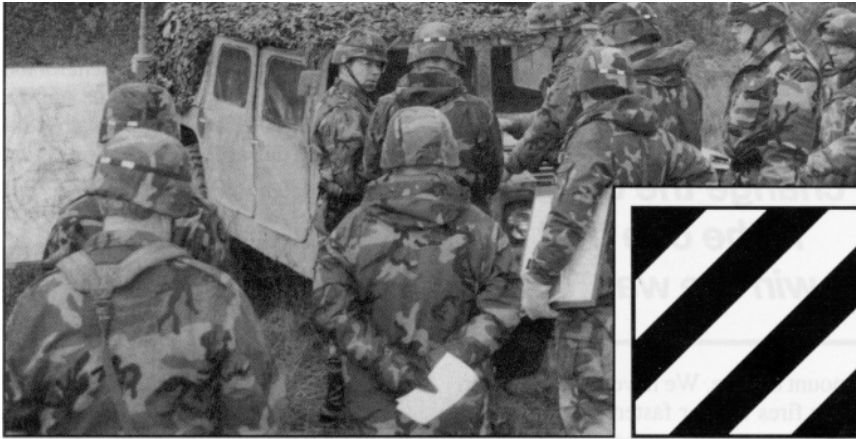
*What message would you like to send Redlegs worldwide?*

You're making great strides in the totality of the fire support. You and maneuver are working more closely together—a war-winning combination. You're doing a better job than I did back when. But you need to do better in forcing the marriage of fires and maneuver—not just a one-night stand.

Stay tough and innovative—don't look back, only forward.



**General Crosbie E. Saint was the Command-in-Chief of the US Army Europe (CINCUSAREUR) and Seventh Army, Headquarters in Germany, for four years from June 1988 until July 1992 when he retired from the Army. He also commanded III Corps, Fort Hood, Texas, for three years, and the 1st Armored Division, Seventh Army Training Center and 11th Armored Cavalry Regiment, all in Germany. In one of his two tours in Vietnam, General Saint commanded the 1st Squadron, 1st Cavalry, Americal Division. In the earlier of his four tours in USAREUR, he served as a platoon leader, with Sergeant First Class Bishop his first Platoon Sergeant, and as a cavalry troop commander twice. Other assignments include a tour as the Deputy Commandant, Command and General Staff College, Fort Leavenworth, Kansas. General Saint holds a Master of Science in International Relations from American University, Washington, D.C.**



# The 3d Infantry Division: Training a Division "On the Bit"

by Major General Richard F. Keller

*The following article was taken from an interview by Patrecia Slayden Hollis, Managing Editor, with Major General Keller, Commanding General of the 3d Infantry Division (Mechanized) in Germany.*

In Montana, we say a horse is "on the bit" if he's raring to go just before a calf launches out of the chute for calf roping. A battle staff is on the bit when it's eagerly trying to get every piece of information about the enemy and situation it can to figure out how to beat him. I train to put the staff—the entire division—on the bit.

Focusing on the brigade slice is key to getting a division on the bit. The brigade is the first level at which you synchronize a lot of combined power—the first level the maneuver commander truly becomes the combined arms commander.

If I can synchronize that piece of the combat power—train it together and see it's logistically supported—I can send that package almost anywhere in the world, and it can be lethal. So the way we schedule training through Grafenwoehr [Training Area, Germany] and the CMTC [Combat Maneuver Training Center, Hohenfels, Germany] focuses on the brigade slice.

## Training as You'll Fight

One aspect of Desert Storm I especially liked was the almost endless

amounts of general support artillery added to the volume of fires. So we train the coordination piece very, very hard in the 3d Infantry Division. It's almost as if I can never get enough artillery.

Let me tell you an anecdote about making the most of your fires. I watched a maneuver battalion commander at "war" at the National Training Center [Fort Irwin, California]. He had what he called his artillery destruction program, or ADP. He refused to maneuver on the enemy force until he had killed everything he could by indirect fires. For up to five hours, all he did was shoot artillery. When he finally attacked, there were only two enemy vehicles left.

None of his tank lights [multiple integrated laser engagement system, or MILES lights] were blinking. None of his Bradley lights were blinking because he didn't drive them into the enemy "kill sack." That commander used his enemy detection capabilities—optics, patrols, etc.—found the enemy and then adjusted artillery on him. Once, he fired a battalion volley 20, not some of the piecemeal shooting we tend to do from time to time.

No doubt about it—putting steel on the enemy turrets instead of engaging the enemy with direct fires is an immensely wise thing to do.

Nonetheless, you need maneuver forces that have turret-to-turret fighting skills. The Air Force, Army aviation and the artillery's counterbattery in Iraq and Kuwait were great. But until the maneuver forces drove up, took the surrender flags, cleaned out the foxholes and policed up the area, we didn't own the ground.

The enemy situation dictates the proportion of fires and maneuver I'd want to take into battle. But for any battle, I'd ask tough questions about how much artillery I was going to have.

For the CMTC, I've written missions for several of our rotations, missions that require the maneuver commander to find and destroy a high percent of the enemy forces with artillery before he can maneuver. That's because he can't afford to attrit half or more of his force in the follow-on battle he'll fight and then try to reconstitute it for the next battle. We didn't do that in the desert. I don't believe we'll do it in war.

So we must train as we'll fight—first, find the enemy and put large volumes of indirect fire from artillery and Apaches [helicopters] or long-range tank fires on

him. This causes the maneuver commander to focus on how he plans his maneuver and how he maneuvers his artillery as part of the war plan—not just maneuver his tank or infantry battalions. That's going on at the CMTC right now.

I tell maneuver commanders that if artillery doesn't destroy, damage or suppress the enemy, it's their fault. Artillery traditionally can put rounds where you ask them. You give them a grid coordinate, and they'll land the rounds there. It's the maneuver commander who lays in his minefield, determines an engagement area, tries to canalize the enemy at a certain place and time, etc. Once this is accomplished, he must rehearse his plan with his combat power integrated.

**"Operation FireStarter."** The division artillery [Div Arty] put together a training program called Operation FireStarter. I stumbled onto the Div Arty Commander [Colonel Leo J. Baxter] conducting FireStarter at Grafenwoehr in a GP medium tent with little blobs of snow, rocks and brush replicating the battlefield. The maneuver commanders described how they would maneuver over it, and the Div Arty Commander made sure they had their artillery with them. Then they shot and adjusted the fire on the targets they wanted to hit.

I knew FireStarter was a winner when company commanders who had been through the training rounded up their lieutenants and stood with them outside the cold tent to wait until the next group of commanders finished so their lieutenants could get the training.

I set the problem for the artillery. I told them artillery fire didn't count unless they destroyed, damaged or suppressed the enemy. This was kind of a gimmick, but one that worked. The artillery took the challenge and came up with FireStarter as a solution, which gets maneuver involved in fires, making fires far more effective.

Now, FireStarter is much more sophisticated. It's a 40-hour scenario with three situational training exercises: defend, attack and movement-to-contact.

We have a high turnover rate in the division—about eight percent per quarter. If we go into battle, I'm not sure I'll have the same fire support officers [FSOs] or fire support coordinators [FSCOORDs] working with the same commanders and S3s. It's "a given" we'll lose some skills in the turnover. So, I require FireStarter as a maneuver training "gate" they must go through before going to the CMTC.

**Top-Quality FSOs.** The Div Arty Commander handpicks the company, battalion and brigade FSOs [company FSOs with platoon leader experience and battalion/brigade FSOs with command experience], which helps the division synchronize its combat power. He sends them to the maneuver battalions and brigades for interviews with the key people who are going to have to coordinate the artillery fires. Then they train together.

**Integrated Training Schedules.** The Div Arty training schedule is structured to integrate fires and maneuver. On one training schedule at Grafenwoehr, the Div Arty color coded red all training that was purely for artillery and color coded blue the training to show maneuver soldiers how to synchronize fires. Half the training calendar was blue. That's not an accident.

## The Band of Excellence

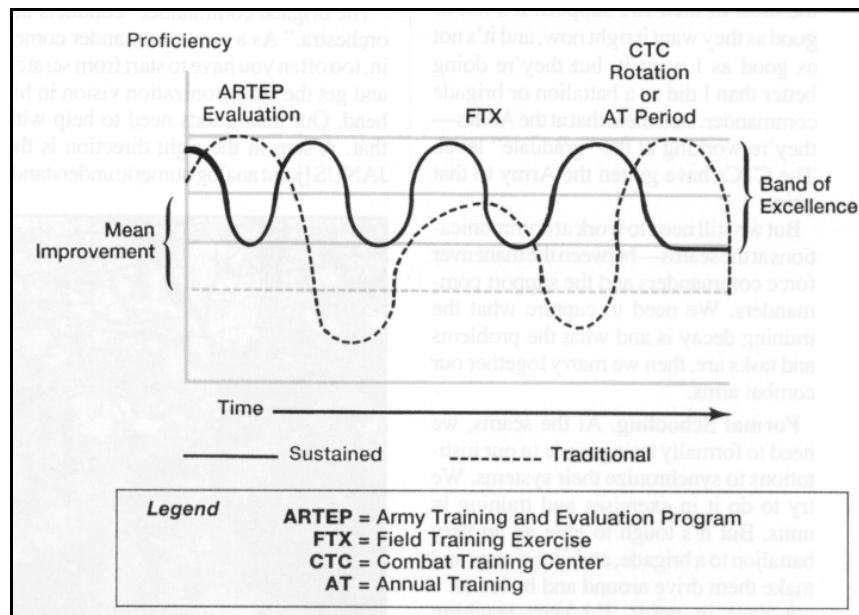
Figure 1-2 in *FM 25-100 Training the Force* is the Army's band of excellence [see the figure]. To stay within the band, units have to be proficient in a lot of skills—individual, platoon and unit skills.

In the 3d Infantry Division, the major subordinate commanders, separate battalion commanders and I work out the resources and time on the quarterly schedule

to train all the events necessary to stay in the band of excellence. Every unit in the division goes to Grafenwoehr and shoots twice a year. In addition, every unit goes through the CMTC once a year. Home-station training is filled with gates—enabling tasks that keep units in the band of excellence—through which units must pass before going on to the next level.

Complementing that band is a discussion in Appendix D "Use of Training Events to Maintain Battle Focus" of *FM 25-101 Battle Focused Training*. The appendix provides information on CTC [combat training center] experiences, the closest experiences to actual war, to help units train to maintain a battle focus.

The appendix causes leaders to choose the right tasks for each unit to train to stay in the band of excellence. For example, I ask my artillery commander what those tasks are. He asks his sergeants, and we come up with individual tasks, drills, small-unit tasks and, finally, battalion tasks to train that will keep the battalion in that band. I ask the maneuver brigade and DISCOM [division support command] commanders, the engineer—everyone—the same thing. They all have different sets of tasks or drills that "curve up and down" in the band but must never curve out of the band of excellence. We discuss those requirements and what we're doing



The Band of Excellence. This "Figure 1-2" of FM 25-100 is the Army's band of excellence. As shown by the more traditional fluctuations in skill proficiency, the band calls for units to sustain and improve skills more systematically, thereby maintaining a higher state of combat readiness.



about them at each quarterly training briefing.

## Improving Fire Support

In terms of 3d Infantry Division commanders being satisfied with the way their intents are being implemented into fire support planning and execution—they aren't satisfied. Fire support integrated with maneuver is very complex. But I would tell you, without blinking an eye, that the first thing those maneuver colonels and lieutenant colonels do is turn to their artillerymen, "lock arms" and fix it.

Though maneuver commanders aren't effective enough with fire support yet, they agonize over it for every battle. They talk, on the command net—"How is my fire support going?" and "Am I hitting the targets?" What *novel* questions to find on a maneuver battalion command net.

Incidentally, our objective isn't to turn into a lock-step outfit that runs up to some sort of a FEBA [forward edge of the battle area], finds the enemy, registers all the artillery and then takes a day or two to shoot some of it. We can't have that. Situations in war change rapidly. So we train to shoot rapidly. Then as soon as units can shoot rapidly, I'll shorten the time and we'll train to shoot even faster.

Commanders are working hard to make the most of their fire support. It's not as good as they want it right now, and it's not as good as I want it, but they're doing better than I did as a battalion or brigade commander. I tell them that at the AARs—they're working at the "graduate" level. The CTCs have gotten the Army to that point.

But we still need to work at communications at the seams—between the maneuver force commanders and the support commanders. We need to capture what the training decay is and what the problems and tasks are, then we marry together our combat arms.

**Formal Schooling.** At the seams, we need to formally train people in our institutions to synchronize their systems. We try to do it in exercises and training in units. But it's tough to glue an artillery battalion to a brigade, and vice-versa, and make them drive around and be lethal.

A case in point, I'd start teaching artillerymen what maneuver does at the basic NCO [BNCO] and the officer advanced [OAC] courses. You state at the beginning of the courses that artillery supports maneuver and that Redlegs must

understand maneuver almost as well as maneuver soldiers. When students are training on a fire support event, they must tie it to a maneuver platoon, company or battalion tactical scenario—make what they learn in the maneuver scenario a "rider" on learning artillery skills.

So, the schoolhouses, even up through the Command and General Staff College [Fort Leavenworth, Kansas], need to produce artillerymen who understand ground maneuver.

But it's not as if cross-knowledge of fires and maneuver belongs in one schoolhouse and not the other. In the maneuver schools, there ought to be a "little hammer" that comes down on maneuver students, depending on how the students answer the question, "What have you told your artillerymen about your maneuver plan so they're always in range and can support you?"

Maneuver students will primarily focus on maneuver. However, should a student's force suddenly stop out of range of his mortars and 155-mm howitzers, then he ought to get a "No Go" for his tactical plan.

We need to begin producing young officers and NCOs who understand that making the most of their combat power means they have to work fires and maneuver together.

The brigade commander "conducts the orchestra." As a new commander comes in, too often you have to start from scratch and get the synchronization vision in his head. Our institutions need to help with that. A step in the right direction is the JANUS [joint analog numeric understanding

system] simulation exercise in the pre-command courses.

**Doctrine.** We need to come up with doctrine to improve our operations at the seams. Moreover, we need to train on and evaluate that integrated doctrine. For example, when units live-fire an artillery ARTEP [Army training and evaluation program], there's no point at which the maneuver commander can tell whether or not the artillery shot what he wanted.

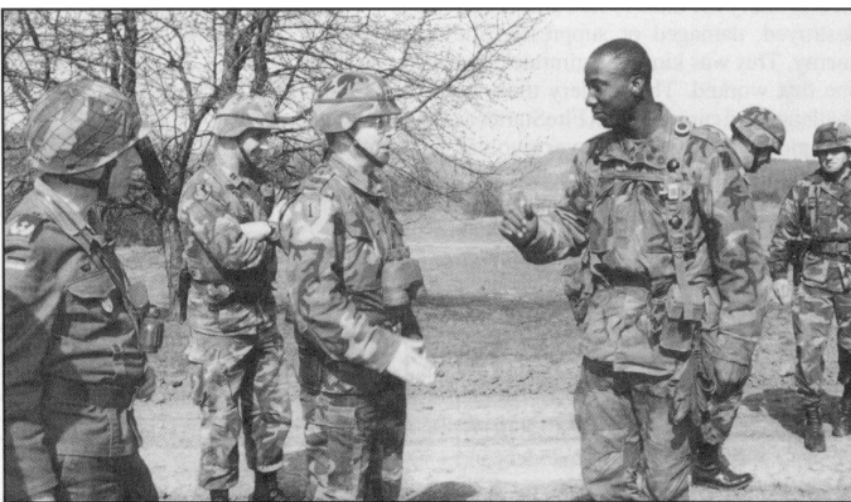
We need to integrate fires and maneuver in the tasks that tell a brigade commander how to fight. Pick up any brigade mission training plan [MTP] and show me where it glues the seams together—integrates the engineers, artillery, Air Force and Army air. There isn't an MTP that does that. We write the different pieces and stovepipe them.

Integrating fires and maneuver in our schools and doctrine will improve our abilities to synchronize combat power Army-wide.

## Training as a Multinational Force

During REFORGER [return of forces to Germany] 1985, an East German colonel landed at our site. He was there to see how many forces we had and how we operated together as NATO allies. Our flank unit was a West German brigade, and we had exchanged some forces.

The East German colonel very formally asked the West German brigade commander and I a lot of questions that were translated back and forth. For example, he asked how we had solved communications



Major General Richard F. Keller, Commanding General of the 3d Infantry Division, exchanges salutes with a 3d ID soldier after reviewing training.



Major General Keller presents a division coin to one of his soldiers for exceptional performance during training.

problems with having different radios. I answered I had sent a track over to the West German brigade with several soldiers with our radios and fire support nets and also sent Air Force and Army ALOs [air liaison officers]. Likewise, the West German brigade commander had sent us a vehicle with some soldiers and communications equipment. Our two brigades were in the attack—he could fire my artillery, and I could fire his. As the East German inspector turned his tape recorder off, he said in excellent English, "My gosh, NATO is *real*."

Such operations in REFORGER are the norm. I had brought my brigade from the United States, and together, we worked out our arrangement. It has been a way of life between us and the West Germans and, to some extent, the French, all these years.

Now, as a division commander, I train the same. Except the days of driving across the countryside in REFORGERs have changed to computer simulations and some command field exercises (CFXs).

We have partnerships with the German 12th Panzer Division and the French 5th Armored Division. We just signed a joint SOP [standing operating procedure] on how to move our three divisions as part of a corps and what the common language, checkpoint system, air defense overwatch and so on will be.

We train as a multinational force and do more of the same we've been doing all these years in the US Army—work very hard to train with out NATO allies. Now, that's not to say our allies all espouse AirLand Battle Operations and plan to

fight like we do. But at the division level, linking allied brigades to go into combat as an integrated force is not far-fetched in NATO.

## Training for the Future

The most important thing we can do is prepare to fight battles in the year 2000 by training rigorously to standard. We have great equipment and great soldiers—the best we've ever had. That was demonstrated in Desert Storm. But we don't measure training very well. What we invest in, then, is the judgment of our commanders about how well-trained their units are.

In Southwest Asia, one sergeant killed three enemy tanks rapidly because he was very well-trained. He knew the Iraqis always employed their tanks in threes. He knew their turrets could only crank a certain number of degrees to the side, and he knew he had the skill to take them out. So he floor-boarded his tank, and over his rear deck, he shot one tank; back over his left front deck, he shot another; and then he swiveled his turret to the right and shot the third one.

A CNN reporter asked him, "How did you *do* that?" The sergeant told him two things: "My equipment is much better than the enemy's, and I train harder and better than he does. I've done the same thing at the CMTC a hundred times, and it was harder at the CMTC."

We need to train to be just that proficient in all we do. Then, with good conscience, we can fight the next battle that's served up on our plate.

**Operations.** Synchronization of combat power is the key to fighting on any battlefield. Whether I'm fighting on a linear or nonlinear battlefield, I still need to concentrate my combat power.

If we're a smaller Army with forces dispersed, then I must be able to focus my power with everything coordinated to be absolutely lethal for both survivability and the destruction of the enemy. In contrast, when the enemy roars at us in large numbers, we're also going to have to be able to focus the largest amount of power at the right place, at the right time.

As the smart howitzer comes along, I'd like to see some operational changes. Let me give you an example of what I mean. We had an exercise the other day at the CMTC where the artillery was going to shoot a prep and minefield for eight minutes.

I asked the artillery lieutenant, "Are you going to shoot a battery or battalion?"

He answered, "We're going to shoot one battery for eight minutes."

"Is it going to move?" I asked.

"No, we're going to shoot low-angle fires."

I said, "If you shoot for eight minutes, I want you to move."

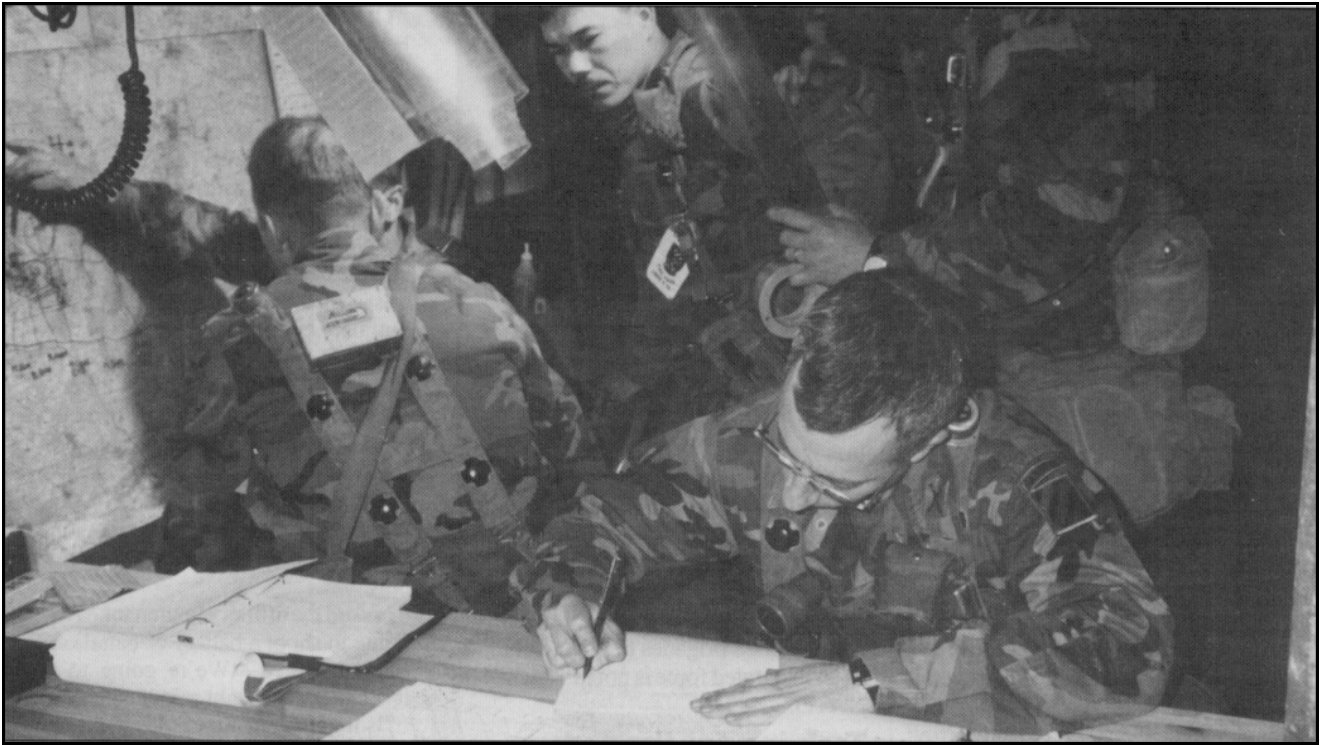
"If I move, then it'll take me  $x$  amount of time before I can be in position to fire in support again."

I asked him, "What if you had the smart howitzer, a howitzer that knows exactly where it is at all times? What if you could do what the MLRS is able to do now?" Then we had a wonderful discussion about maneuvering howitzers, a discussion like I'd have with a tank or Bradley platoon leader.

With a trained smart howitzer crew, the days of displacing an artillery battalion, setting your watch and *hoping* the battalion gets in place in time to pick up the fires again will be gone. A trained platoon leader will be able to move individual systems or pairs and maintain almost continuous fire. Give that howitzer the speed and agility of the M1 tank and Bradley, and you're into a new capability for the brigade slice.

These howitzer upgrades may cause us to modify some of our formations and operations, but I think they'll just be variances—product improvements to the way we do things now.

**Equipment.** Just like we fought the Iraqis in the desert, we could have to fight a different enemy but with similar Soviet-type equipment. Our ability to stand off,



In the 3d Infantry Division, "focusing on the brigade slice is the key to getting a division on the bit." Here Major Wayne Chiusano, FSO for the 2d Brigade, writes the order for an upcoming operation at the CMTC.

see him and prosecute our battle, all the while being invisible to him, is critical.

After a tank battle, one of the Iraqi battalion commanders interrogated said, "Suddenly, the turret lifted off the tank to my left, the turret lifted off the tank to my right and I could see nothing. So I shot at the sound and then gave up."

If we can do that with our direct-fire systems, the deeper our indirect systems can shoot—destroy, damage or suppress the enemy—the more lethal and survivable we are. Therefore, any such product improvements to rounds, types of artillery systems or their ranges will help.

In terms of range, you can never shoot too far. But with the range available in MLRS, the 155-mm really is a great howitzer. I'm relatively comfortable with product improvements to the equipment I have at the division level. Of course, I'd love to have the capability to see over the hill with a UAV [unmanned aerial vehicle].

I'm also very interested in my corps commander being able to do a great deal for me. Because I must duke it out with the short swords, if you will, he has to have the long spears. So the range and capabilities of a round or system need to complement the corps fight even more than the division fight.

## Taking the Bit

20

When you really get a good unit, one that integrates all unit minds, it decimates the enemy, engaging him with all its systems. Just tanks can't do it. Just Bradleys or artillery can't do it. It takes them all.

The other day, I watched one such unit, though greatly outnumbered, decimate the OPFOR [opposing force] at the CMTC. The OPFOR was in the attack with a motorized rifle regiment—197 vehicles. The friendly task force had 40 tanks, 36 of which were in fighting positions (four stuck in the mud and inoperable), and 23 Bradleys. With that force, some MLRS and direct support artillery, the task force "cleaned the regimental clock."

The task force shot a FASCAM [family of scatterable mines], causing some casualties but mostly stopping the enemy. The friendly forces then rained artillery on him. The enemy turned south to escape the artillery fires and headed right into direct-fire engagements. In the chaos, the enemy got off his secure net. The task force had the OPFOR where they wanted him for the final part of the decimation.

I followed the fight. I went to the artillery and maneuver brigade TOCs [tactical operations centers] and the DTAC [division tactical command post] and DMAIN [division main command post]. The best news is, they all had the

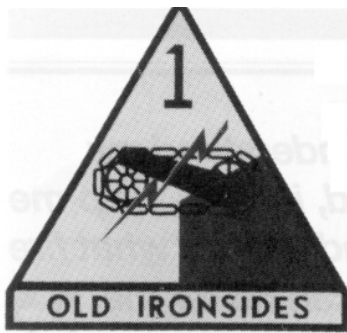
same picture.

I can fight a division that's trained that way, one that knows what's going on and can focus its combat power. That's a division *on the bit*.



**Major General Richard F. Keller** assumed command of the 3d Infantry Division (Mechanized) in Germany in August of 1991. His previous assignment had been as Director of Training, Office of the Deputy Chief of Staff for Operations and Plans, Washington, D.C. Major General Keller also served as Assistant Division Commander, 3d Armored Division, and Community Commander of Giessen, Germany. He commanded the Third Reserve Officer Training Corps Region, Fort Riley, Kansas; 1st Brigade, 4th Infantry Division (Mechanized), Fort Carson, Colorado; 1st Battalion, 12th Cavalry, 1st Cavalry Division, Fort Hood, Texas; and an infantry company and a combat advisory team, the latter in Vietnam. He's a graduate of the Naval Command and Staff College, Newport, Rhode Island, and the Army War College, Carlisle Barracks, Pennsylvania. Major General Keller holds a Master of Science in International Relations from George Washington University, Washington, D.C.

*Field Artillery*



# Fighting the 1st Armored Division: Fires and Maneuver—One and the Same

by Major General William M. Boice

The following article was taken from an interview by Patrecia Slayden Hollis, Managing Editor, with Major General Boice, Commanding General of the 1st Armored Division. Some of the interview questions were about the division's Warfighter, Battle Command Training Program (BCTP), an exercise in which General Boice deployed his attached multiple launch rocket system (MLRS) battalion well forward with the divisional cavalry squadron.

The 1st Armored and 3d Infantry (Mechanized) Divisions in US Army Europe (USAREUR) are the only two divisions in the Army that each have a MLRS battalion attached from V Corps Artillery's 41st Field Artillery Brigade, which has five MLRS battalions.

**F**ighting a division is a tremendous fire distribution challenge. It's similar to a big Tank Table 12 that integrates tactical and shooting skills into one exercise. In that table, a tank platoon is tactically deployed on a range and has many targets presented at several stations. One tank may be able to see the targets on the left, but not the targets in front, while another may be able to see the targets on the right. The tanks start knocking down targets, both in and out of their sectors. As soon as the first bank of targets is down, another bank is presented with the platoon killing 36 to 40 targets in a short time, some at 2,500 meters.

My fighting sector is sort of like a "Division Table 12." So when I roll into my sector, my first targets may start "popping up" at 50 to 80 kilometers out. Similar to the platoon leader, my challenge is to

distribute my fires to kill those targets, making the most of the assets at my disposal and killing throughout the length and breadth of the battlefield. If I wait until all the targets

are within direct-fire range, I'll have too many targets—a sure prescription for death and disaster. Therefore, I must decide in advance when and where I want to kill which targets.

## Maneuvering Field Artillery

In most instances, fire supporters take the first fight, striking enemy targets as they present themselves in depth. So fires must move on the battlefield to respond to my fire distribution missions—they must be focused to achieve the effects I want. The artillery must *maneuver*, bringing its combat power to bear anywhere in the division sector. This maneuver of fires is the same, regardless of whether we are talking about an artillery battalion or a tank or infantry outfit. Artillery battalions

maneuver to bring indirect fires on deep targets while attack battalions (ground and air) maneuver to be in position to bring their fires on the enemy.

Though artillery is primarily an indirect-fire system, it also can operate similarly to a direct-fire system. Redlegs use the G/VLLD [ground/vehicular laser locator designator] to light up a target—put a Copperhead round into the turret of an enemy tank, for example. That's similar to a direct-fire system. So, the distinction between direct fires and indirect fires becomes blurred, and the difference between fires and maneuver becomes less pronounced.

All my killer systems maneuver and fire, whether they're artillery pieces, tanks, Bradleys or soldiers. Some killer systems have greater ranges than others. But at the most basic level, my lethal systems accomplish the same purpose.

## Maneuvering on the Nonlinear Battlefield

On the nonlinear battlefield, forces will be fluid—moving in different directions at the same time—so the ability to command and control fires will be an especially

daunting challenge. The division will fight in three-dimensional boxes throughout its sector—integrating fires and maneuver on the ground and in the air. On that battlefield, we'll need revised fire control measures and very maneuverable fire support assets, especially artillery, to eliminate fratricide and maximize the effectiveness of our fires.

Under such conditions, targeting priorities will be crucial. For example, I'll have high-priority "footprints" on the ground where my command and control [C<sup>2</sup>] assets and MLRS and other deep killers are located. I will protect those footprints by using Firefinder [radar] tactical friendly zones. If we get rounds impacting into one of those footprints, the enemy systems firing on them will go immediately to the top of our target list, and we won't stop firing until we take those targets out.

I'll designate second-priority, high-payoff targets in the enemy sector. If the artillery isn't firing on other targets with higher priority, then it will fire on these targets.

There will be certain areas in which I'll want to mass fires on-call, say, within 30 minutes—a mission we call "power strike." (By the way, massing artillery in this division is two battalions or more—not two batteries.) With forces constantly moving on the battlefield, artillery pieces may have to reposition quickly—maneuver—to be able to mass those fires (focus combat power) across the width and depth of the battlefield.

To be effective, the artillery has to plan for all aspects of fires in a Field Artillery scheme of maneuver. It also has to have revised fire support coordination control measures to be able to attack isolated pockets of enemy targets in the priority I'll need them attacked.

## **Synchronizing the Division**

In the 1st Armored Division, we work very hard as a team to synchronize fires—myself and the G2, G3 and Div Arty [division artillery] and aviation brigade commanders.

And the word "synchronization" applies not only to the entire battle, but also to portions of the process of fighting that battle. For example, we synchronize the collection of information by a surveillance system looking throughout our entire sector, as well as for specific designated targets—TAIs [targeted areas of interest] and NAIs [named areas of interest].

---

**“...my FSCOORD must understand my intent at a visceral level and, indeed, help me develop it. I, in turn, must understand what fire support can do for me.”**

---

As the division commander, I became totally engrossed in targeting and fighting the deep fight, a lengthy and exhausting process. Our team synchronization generally begins with the development of the intent and the identification of high-payoff targets. Then, the Div Arty and the aviation brigade commanders plan and recommend the scheme for attacking these targets as they present themselves.

For this process to work, my FSCOORD must understand my intent at a visceral level and, indeed, help me develop it. I, in turn, must understand what fire support can do for me. I need to know the capabilities of the FSCOORD's "quiver of killer systems." He gives me tutorials every now and then on exactly what he can provide—what targets can be attacked most efficiently by which systems and what kind of effects I can expect. Our relationship has to be one with a mutual and clear understanding of intent and capabilities.

## **Fighting MLRS Forward**

The division's first real fight is the deep fight. We want to "see" the enemy as far forward as possible and then "lock on" as soon as we can—control him before he begins to control us. I seek to move my assets forward and "reach out and touch him." This was one of the overriding principles in the 1st Armored Division's Warfighter exercise.

The situation in the beginning of our Warfighter exercise was a movement-to-contact on a very fluid, nonlinear battlefield with our units well forward in the enemy's security zone. He had remnants of an anti-tank [AT] battalion, including Sagger [tactical missiles], some BMPs [Soviet infantry fighting vehicles] and other such systems in the zone. The area wasn't prolific with enemy forces, but there were some there, and they were troublesome.

In order to establish and maintain the initiative, I chose to accept risks. On a fluid battlefield, occasionally accepting risks is an inherent part of the fight. So I accepted risks first with the artillery by pushing it well forward, as far forward as I possibly could, to gain maximum range.

I moved my MLRS battalion out in front of the main body just behind the divisional cavalry squadron, which was reinforced with tanks. I also employed a mechanized infantry company (Bradleys) attached to the artillery battalion for protection in what we call an Artillery Combat Team (ACT). So there were sufficient friendly forces out front for security. The artillery wasn't in front of the FLOT [forward line of own troops], but the FLOT—an interesting term in this situation—was always shifting as we moved forward.

The reason I pushed the artillery so far forward was to strike the enemy before he

---

**“On a fluid battlefield, occasionally accepting risks is an inherent part of the fight. So I accepted risks first with the artillery [MLRS] by pushing it well forward, as far forward as I possibly could, to gain maximum range.”**

---



could strike my main body—to cripple his ability to fire *before* he fired. So my intent was to win the "counterfire" fight before it started, which is a very important concept fundamental to success. I pushed collection and deep-strike systems forward, linked them together and was very proactive in the counterfire fight.

We put several elements of the battlefield operating systems [BOS] forward to collect intelligence on the enemy—the most critical one being the MI [military intelligence] battalion. We linked the MI battalion with the artillery and set up a quick-fire channel to make sure we could engage deep targets in near real time. The MI battalion collected against digital communications that signified the enemy's tactical fire direction systems were operational, which gave us a good read on where his command and control nodes were throughout our sector. That information went into the quick-fire channel for the artillery to shoot those nodes as directed.

We also used the MI battalion for BDA [battle damage assessment]. The battalion took a digital read 30 minutes or an hour after the artillery fired to see which C<sup>2</sup> nodes were still emanating. Those nodes that weren't emanating, we considered gone, giving us a measure of the effectiveness of our fires. So we didn't have to assume the enemy battery had been taken out if it wasn't firing; we could get a read on its digital activity.

Now, it's true, the enemy battery may not have been transmitting at the time we took the reading. But the fact is, the MI battalion had pretty accurate BDA, as we found out later.

In Warfighter, we had no less than 10 enemy artillery battalions arrayed against us. Using an aggressive artillery campaign, we took out five of those battalions in the first six hours of conflict, most of them during the deep battle. That made the OPFOR [opposing force] artillery a "non-player." The division was never hurt by the enemy artillery in Warfighter because of our proactive "take-out-the-artillery" campaigns up front in every operation—even before the enemy fired.

But we can't fight the counterfire fight any deeper than we can see or shoot. With an MLRS battalion in the division, we can kill the enemy almost 50 percent farther than we can with cannon artillery, a definite advantage. Moreover, the lethality of MLRS means that if we can find the enemy's artillery, we will kill it.



My challenge is to collect information on the enemy farther out using Firefinders and systems in my MI battalion. Sometimes I can't see very deep. Sometimes I have to rely on corps systems to see deep for me. So it's a complex equation all tied up in what I can see and what I can strike, and the MLRS battalion gives me the capability to strike deeper in all weather conditions.

As a sidebar, this raises the issue of divisional MLRS and confirms the wisdom of the decision to create MLRS battalions in divisions. Of course, no heavy division commander alive would turn that down. But the issue depends on who you are and where you sit. If I were a corps commander, I might be inclined to hold more MLRS battalions in the corps as one of the systems I can use to influence the battle. On balance, however, MLRS organic to divisions is the way to go while ensuring that additional MLRS and cannon battalions remain at corps.

### Improving Fire Support

My fire support assets, including Field Artillery, are critical to the successful prosecution of the battle. And though we have the finest Field Artillery the Army's ever had, there is always room for improvement. The Army must be totally

---

**“ I need artillery commanders to think like maneuver commanders....Because my first fight in any operation is the artillery maneuver fight, I need my artillery to know how to maneuver. ”**

---

prepared to fight and beat a sophisticated, well-equipped enemy anywhere, anytime.

**FA Maneuvering.** If my cannon artillery can fire 20 kilometers and my division front is 60 kilometers wide, I have to maneuver artillery to be able to focus my combat power across the width of my front. Therefore, I need artillery commanders to think like maneuver commanders. Sometimes in the past, they have been content to be fire supporters. Because my first fight in any operation is the artillery maneuver fight, I need my artillery to *know* how to maneuver.

**Commander's Intent.** I'm not satisfied that the commander's intent is as clearly understood by fire supporters at the lower levels. The maneuver commander must do a better job of articulating his intent, not only from the scheme of maneuver side, but also from the resource side, telling what he expects to accomplish with his battlefield operating systems.

At the same time, the fire supporter needs to be more aggressive. He can't just sit back and wait for guidance to come down—FSCOORDs and FSOs [fire support officers] need to be more intimately involved in developing and executing the commander's intent. It's a combined arms fight, and fire support is a significant piece of that fight.

The fire supporter needs to help the commander develop his intent and fire plan. He must be proactive when a commander *begins to discuss* his intent. That goes a long way toward implementing the intent because both the commander and

fire supporter clearly understand what's going to happen. And the fire supporter doesn't go away saying to himself, "I can do what the commander wants me to do, but it isn't what I *want* to do." At the most basic level, the fire supporter needs to accept ownership of the intent.

**FA Trainer.** In terms of training, simulations and training devices are great and save money and resources. Though I have to actually get on the range and fire live, to a certain extent I can simulate firing exercises for my tanks and Bradleys. For example, I can link four UCOFTs [unit conduct-of-fire trainers] for tanks and form a fire distribution program in SIMNET [simulation network]. I can use PGTs [platoon gunnery trainers]. I need to be able to do that with the artillery. We can't quite get the artillery effects we need in SIMNET. I need an artillery trainer that will give me realistic effects and let my combined arms commanders have that experience.

**Equipment.** I believe the most important single improvement we need to make in our equipment is to redress our deficiencies in our ability to look deep. We absolutely need unmanned aerial vehicles [UAVs] both at the division and corps levels to see deep, and at the same time, I certainly would like greater artillery range—understanding there would be costs and trade-offs. I'd like an artillery system that can at least range the width of my sector and range as deep as I can see with my real-time sensors.

Army TACMS [tactical missile system] at the corps level is a great asset for reaching out at least 100 kilometers. While divisional MLRS units will soon be Army TACMS-capable, there will probably be severe CSR [controlled supply rate] limitations on my ability to fire Army TACMS in any great volume. Army TACMS will probably remain primarily a corps weapon. And the corps commander is going to deploy Army TACMS fairly deeply behind my FLOT. So, in terms of max range I can get, it will be something less than 100 kilometers. Even under corps control, Army TACMS gives me a fall-back position as I accept risks in some areas. Greater range on other artillery systems would help plug the gaps, as well.

In terms of battlefield mobility, Field Artillery needs a faster FIST-V [fire support team vehicle]—one that can keep up with the maneuver forces. It needs to be a low-risk, low-profile vehicle that looks like other vehicles on the battlefield so

the enemy won't target it specifically.

## Fighting in the Future

Despite the artillery's resounding success in Operation Desert Storm, we cannot rest on our laurels. As we look ahead to the demands of future battlefields, the Army first has to be more deployable. In the old general defense plan [GDP] mentality, we anticipated some warning time—that we could "spin up" to the level we needed to be in a timely manner to face a Warsaw Pact contingency. Now, with so many possibilities of flare ups worldwide and the requirement to move out with no notice, we have to be prepared to rapidly deploy as we are. That demands we maintain very high training and readiness standards.

Another challenge is configuring and integrating force packages for specific contingencies and giving those packages their support slices. It would be very simple if we deployed as an entire division in our habitual configuration. But the Army could face contingencies that span the operational continuum, requiring force packages that range from two-man teams to a full-up division or corps.

If, for example, I had to send a brigade from this division to support a regional contingency, that brigade would go with a significant slice of fire support. And that includes fire support that isn't habitually associated with it. Of course the packaging depends on the particular contingency, but I might send an entire MLRS battalion to support the deploying brigade.

Our division's really working hard on rapid deployment—how to load out and standardize load plans and force packages. We must know what our packages look like and weigh, the cubages they require, how long it takes to deploy them and a range of issues that span the complete operation. We have march tables and standard plays that allow us to deploy in any configuration. I need to be able to tell the division, a brigade or task force of any size to move and have full confidence they can do that within a certain time.

Another challenge for the Army is to maintain its technological edge and forge ahead with doctrine—be creative and forward thinking. We have to keep our eye on potential threats: those nations that are building and modernizing their forces and continue to train. We have to make sure they're not getting ahead of us in technology and doctrine. There does not

appear to be a significant military threat confronting us right now, but there's a traditional danger in cutting the forces back too far. We must keep pace with modernization, with research and development, and not allow our technological advantage to diminish. Our Army also must remain *trained* and *ready* as we maintain our edge.

Our future force will have systems that see and reach deeper, are more lethal and can move faster. In the future, every vehicle in the Army may move at a much greater speed with the ability to fire on the move and produce highly lethal effects. Today, the technology is available for artillery to fire on the move, just like tanks. An interesting concept.

To meet the demands of such fast-paced warfare, every artilleryman must think like his maneuver-oriented forbearer John B. Pelham, Jeb Stuart's artillery commander in the Civil War. Pelham was a "maneuver" commander, maneuvering his artillery in front of the infantry whenever it was required.

Now, it's true, artillery was more of a direct-fire system at that time. But it's a maneuver state of mind I'm after. I want a bunch of John B. Pelhams on the battlefield who can maneuver, accept risks and put fires *where* I need them—*when* I need them.

I've got just such a bunch of great artillerymen in *America's Tank Division*.



**Major General William M. Boice has commanded the 1st Armored Division in Germany since July 1991. He also served as the Assistant Division Commander of the Division and Commander of the Nuremberg Military Community. Other commands include the 2d Armored Training Brigade, Fort Knox, Kentucky; 2d Battalion, 34th Armor, 4th Infantry Division (Mechanized), Fort Carson, Colorado; a troop in the 2d Squadron, 3d Armored Cavalry Regiment (ACR) in Germany; and a troop in the 11th ACR in Vietnam. Among other assignments, General Boice has served as the Chief of Staff of the US Central Command (Rear), McDill AFB, Florida; Executive Officer to the Director for Command, Control and Communications Systems, Office of the Joint Chiefs of Staff, Washington, D.C.; and Regional Armor Advisor to the Imperial Iranian Ground Forces (Khuzestan Province).**

## Contest Winners

**First Place:** "The Battle of Koniggratz" by Captain Steven J. Eden, Armor

**Second Place:** "The Creation of Artillery Hell" by Major Albert A. Mrozek, Jr.

**Third Place:** "Lessons Learned from Artillery in MOUT" by Captain Kevin J. Dougherty, Infantry



## Judges of the 1992 History Contest

The US Field Artillery Association thanks the following expert historians for judging this year's submissions:

- **Brigadier General Robert H. Scales, Jr.**, author of several historical pieces and the book *Firepower in Limited Wars*. He is currently serving as the Assistant Chief of Staff for Combat Developments, Training and Doctrine Command (TRADOC), Fort Monroe, Virginia. His Field Artillery assignments include Commander, Field Artillery Training Center and Chief of Staff, United States Army Field Artillery Center, Fort Sill, Oklahoma. He commanded two batteries in Vietnam and a battalion in Korea. He holds a doctorate in history from Duke University, Durham, North Carolina.
- **Colonel Richard M. Swain II** is the author of several historical articles and is Director of the Combat Studies Institute, Command and General Staff College, Fort Leavenworth, Kansas. Colonel Swain commanded the 2d Battalion, 28th Field Artillery, 210th Field Artillery Brigade, West Germany. He earned his doctorate in history from Duke University.
- **Major Donald A. Carter** served as the Military History Instructor at the Field Artillery School, Fort Sill, Oklahoma. He has also served as Assistant Professor, Military History, US Military Academy. He holds a Doctorate of Philosophy in History from Ohio State University. Major Carter commanded batteries in the 2d Battalion, 34th Field Artillery, III Corps Artillery, Fort Sill, and in the 2d Battalion, 17th Field Artillery, in South Korea. He has also served as S3 for the 2d Battalion, 18th Field Artillery, III Corps Artillery.

## Upcoming 1993 *Field Artillery* Themes

Month	Theme	Copy Deadline
February	Joint and Combined Operations	5 October 1992
April	Deep Operations	7 December
June	Mobilization and Deployment	8 February 1993
August	History Contest	3 February (Contest) 5 April (Others)
October	Fire Support for Combined Arms Operations	7 June
December	Red Book: Annual Report	9 August

# 1993

## History Writing Contest

The United States Field Artillery Association is sponsoring its eighth annual History Writing Contest with the winners' articles to be published in the August 1993 edition of *Field Artillery*. To compete, submit an original, unpublished manuscript on any historical perspective of Field Artillery by 1 February.

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

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

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

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

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

By 3 February 1993, send the manuscript to the United States Field Artillery Association, ATTN: History Contest, P.O. Box 33027, Fort Sill, Oklahoma 73503-0027. For more information, call the Editor or Managing Editor of *Field Artillery* at DCTN 639-5121/6806 or commercial (405) 351-5121/6806.

## Battle-Focused Training and TTP:

# The Battle of Königgrätz

by Captain Steven J. Eden, AR

*In 1866, the Prussians faced the Austrians during the Seven Week's War in a bid for control of Central Europe. As part of that war, Prince Kraft zu Hohenlohe-Ingelfingen led the artillery supporting the Prussian Guard Corps at the Battle of Königgrätz in early July. And as he was soon to learn, he led his gunners with a false sense of their capabilities.*

*Though the Prussians were successful in their bid, Hohenlohe's artillery was ineffective on the battlefield—swift to fire but slow to hit targets. Taking these bitter lessons to heart, Hohenlohe set about revamping the artillery to make its training and tactics, techniques and procedures (TTP) more realistic. As demonstrated in the Prussian Army's war with the French just four years later, Hohenlohe's battle focus was effective.*



**O**n a rainy July day in 1866, four batteries of Prussian artillery lashed their teams over the muddy, rolling hills of Bohemia, struggling to reach the advanced guard. The road blocked by a long column of infantry, the gunners were forced cross-country through tall fields of ripening corn.

The commander galloped ahead of his guns toward the fighting, hoping to evaluate the situation and choose firing positions before the batteries came up. He was a Prussian nobleman of distinguished service but limited combat experience: Prince Hohenlohe-Ingelfingen. He led the regiment that supported the Prussian Guard Corps of Prince August von Wurttemberg.

Hohenlohe was determined to bring his guns into action, a feat he had been unable to accomplish since the campaign began.

The Prussian habit of relegating the corps artillery to the rear of the march column was the cause of the guns' inaction. This inability to contribute to the successful, though hard-fought, campaign nagged deeply at Hohenlohe.

In fact, it had provoked a temperamental outburst from him during that July morning's orders conference when he learned his beloved guns were to follow the corps, once again. The tantrum had accomplished one thing, however; the corps chief of staff allowed Hohenlohe to move his batteries up to the middle of the column (Gordon Craig, *The Battle of Königgrätz*, New York, 1964).

Hohenlohe's cursing, sodden gunners drove their caissons forward. They hacked at grain stalks that fouled the wheels with their sabers and cut horses, which were



dead from sheer exhaustion, out of the traces. Meanwhile, Hohenlohe hurried up the last hill to reach the advanced guard. There he found his corps commander, and together, they examined the battlefield spread out below them.

The Prussian Guard Corps represented the spearhead of the Prussian Second Army, the easternmost of three columns that had crossed into Austria in the summer of 1866. Von Moltke, the mastermind of the Prussian offensive, had accepted the risk of defeat in detail to conduct a strategic envelopment of the Austrian Army; he had not overestimated his opponents. The lethargic, inefficient Austrians failed to take advantage of their interior lines and were trapped with their backs against the Elbe River. (See Figure 1.)

Von Moltke's plans were on the verge of fruition as his three columns finally converged simultaneously near Königgrätz, the fortress that would lend the battle its name. To the west, the Austrians were pinned by the attacks of two Prussian armies but were holding fast to excellent defensive terrain. Now, however, the Second Army was poised to descend on the Austrian's largely unguarded right flank (Craig).

Though most of the fighting was masked by a series of low ridges, Hohenlohe and his superiors could clearly see where the Austrians had anchored their line. The line was atop a hill marked by two distinctive linden trees. Von Wurttemberg ordered his troops forward, using the trees as guideposts. Hohenlohe was directed to "bang away smartly" in support (Craig).

Prince Hohenlohe eagerly complied. Although he had no experience with the new field guns, he showed confidence. Hohenlohe explained, "I was still full of the confidence with which our experiences in time of peace had inspired us" (Prince Hohenlohe, *Letters on Artillery*, London, 1898). Moreover, it was obvious

# Battle of Königgrätz

3 July 1866

Morning



Figure 1: Battle of Königgrätz on the Morning of 3 July 1866. The plan for the Prussian Guard Corps, including Prince Hohenlohe's artillery, was to accept risks while attacking to envelop the Austrian Army. The risks were well-taken that July morning as the Austrians failed to take advantage of their interior lines and found themselves trapped with their backs against the Elbe River.

he had an opportunity to contribute decisively to the outcome of the campaign, if not the entire war. Few subordinates have gone into battle so aware of the importance of their missions and so determined to carry them out.

Deploying his guns along a fold of ground 1,900 paces north of the objective, Hohenlohe opened supporting fire against the Austrian guns, which were beginning to react to the suddenly materializing threat to their flank. As the infantry deployed into a line, preparing to assault, an Austrian battery appeared off to the right. The battery's guns were limbered, and it was attempting to withdraw.

Hohenlohe quickly redirected the fires of his four batteries against this prime target. But to his dismay, every "shell fell in front or in rear, but not one hit the enemy. The battery escaped without losing a single man or horse and disappeared behind the hill" (*Letters*).

Turning the attention of his cannons again to the main Austrian gun line, Hohenlohe continued to fire until the attacking Prussian infantry masked his batteries. The Austrian artillery also stopped firing and retired out of sight behind the high ground. Hohenlohe and his gunners rejoiced, convinced they had driven off the enemy guns. The Prussian artillery commander moved forward with the infantry as they seized the hill, ordering his second-in-command to move the guns up as soon as he had selected a new firing position.

Once on the high ground, Hohenlohe could see the retreating enemy pounding down the far side. He quickly scouted new positions for his batteries and dispatched his adjutant to bring the guns up, anxious to secure the heights against a possible counterattack. Conscious of the importance of this action, Hohenlohe was satisfied his cannons had played an important role.

As he awaited the arrival of his command, Hohenlohe wandered over to the site of the Austrian gun line, as he stated, "[to] convince myself how far the wreck of the enemy's artillery would bear witness to the annihilating effect of our guns" (*Letters*). What he found pricked his professional pride and deflated his sense of accomplishment.

"I found nothing. Not one gun with broken wheels. Not an atom of any limber-box torn to pieces by its explosion, not a horse with shattered limbs; absolutely nothing marked the place where the enemy's artillery had stood" (*Letters*). The disappointed commander had little time for reflection that day, for he and his guns were involved in hard fighting before the battle was over.

In spite of Prince Hohenlohe's artillery's performance, the Prussian forces prevailed. By the end of the afternoon, its right flank turned, the Austrian Army dissolved in panic-stricken flight across the Elbe. (See Figure 2.) Within a few days, the Emperor of Austria began peace negotiations. The Austro-Prussian, or Seven Week's War, ended in triumph for Prussia, ensuring it the leading role in Central European affairs for the next half century.

Yet the joy of victory was leavened by the bitter memories of personal and professional failure for Hohenlohe and many of his brother artillery officers. The Prussian Field Artillery as a whole was poorly handled, rarely concentrated and slow to deploy in support of the maneuver arms. As a result, casualties among the infantry and cavalry were unnecessarily high.

Despite ultimate victory, Prussian gunners returned to their peacetime cantonments determined to rectify the shortcomings revealed by the war. Questions of doctrine, organization and modernization were dealt with by the General Staff, and reforms in these areas were under way almost before the smoke cleared.

But for a lower level commander like Hohenlohe, the memories of his unit's failure at Königgrätz were fresh in his mind, and the problem was simpler and more specific. As he stated in *Letters*, "The results in the battle did not altogether come up to the expectations which I had cherished with regard to the effect of the guns under my command." So, while the Prussian Army established a special artillery school, rewrote the artillery manuals and hastened the transition from

smoothbore to rifled cannons, Hohenlohe set about teaching his regiment how to shoot better (Ian Hogg, *A History of Artillery*, New York, 1974).

### Battle-Focused Training and TTP

Upon reflection, Hohenlohe decided the problem stemmed from artificialities in the pre-war training program. For instance, batteries were supposed to fire on ranges where the targets were set up at unknown distances to practice the crews and gun-captains in the art of estimating range, properly laying the guns and adjusting fire as necessary.

Unfortunately, "the targets always stood in the same place, not only during the whole course of practice, but in part from year to year....Anyone, even if he had

been only a few times on the practice ground, knew so well the distances from the targets...that a mistake was seldom made, and a mistake, when it was made, excited general astonishment" (*Letters*).

The targets were holdovers from the days when units fought in solid lines or columns with soldiers standing shoulder-to-shoulder. These types of targets, normally made of wood, were unsuitable in a day when tactical formations were becoming increasingly open. In addition, the breech-loader made it possible for troops to fire while lying down or taking advantage of cover.

Furthermore, no provision was made for moving targets. Thus, the the silhouettes—stationary, too large, and at known ranges—were extraordinarily easy to hit. This inevitably inflated the artillery's sense of its own accuracy.

Paradoxically, the unrealistic training also devalued the worth of good shooting. Because virtually every battery demolished its assigned targets on the practice range, other criteria were used to distinguish one unit from another. Hohenlohe commented on this phenomenon, one surely familiar to generations of artillerymen.

"I have never...known an inspecting general [to] use the effect produced by the fire of a battery as a standard by which to judge of the excellence of its instruction. This was judged by the correct execution of the drill of marching, of the service of the guns, the turnout of the men and horses and the time which the battery took to come into action...." Most senior officers, he went on to say, regarded the actual firing "as an opportunity of getting rid of so much heavy shot and shell" (*Letters*).

The emphasis on drills gradually made them ends in themselves, rather than means of producing effective fires. His artillery's TTP were designed to facilitate training, rather than prepare the units for war. The drills eroded the gunners' ability to hit targets, as the crews were trained to take shortcuts in unlimbering, loading, setting the trails and properly laying the guns. Therefore, while onlookers gaped in astonishment at batteries that could loose a round almost before they quit moving, "a wild manner of serving the gun was introduced, which was not conducive to a good effect of fire" (*Letters*).

The pre-war method of training produced crews unable to provide effective fire support. Ranges did not reflect the demands the battlefield would place on the artillery, and the standards for evaluating batteries were not merely artificial but counterproductive. At the same time, crews were so proficient at meeting or exceeding the defective standards that reforms in training seemed unnecessary. As a result, in 1866 Prussia went to war with an artillery branch that could not fulfill its mission.

### Revamping the Artillery

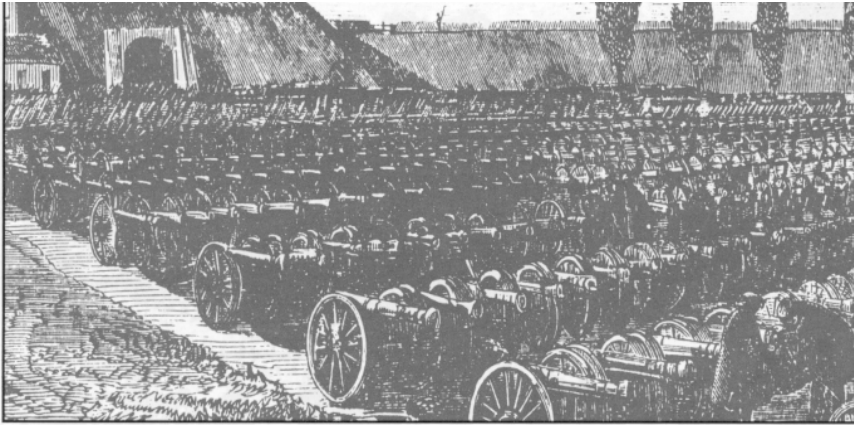
Hohenlohe's new training program relied on three basic reforms: more realistic range exercises, an emphasis on proper firing procedures rather than on speed and the liberty for subordinates to experiment. In this he was aided by his army's recognition of the problem, which afforded him more money and ammunition for training.

The first change involved revamping the old gunnery exercises. Hohenlohe cut



Figure 2: Battle of Königgrätz on the Afternoon of 3 July 1866. By afternoon, the Prussian forces prevailed and routed the panic-stricken Austrians who fled across the Elbe. Despite his army's victory, Prince Hohenlohe and his Prussian gunners returned to their peacetime cantonments determined to rectify the shortcomings in their training and TTP, shortcomings that led to their ineffectiveness during the war.





Field Guns Captured by the Prussians at Sedan. Hohenlohe's artillery took part at Sedan, demonstrating its superior counterbattery fire and accuracy.

new targets to represent single men, horses and guns placed in formations as they might appear on the battlefield. Some targets were as small as a man's head to represent skirmishers lying prone. The targets were rearranged daily, so each succeeding unit faced a different array. Finally, units were often stopped at random during their practices and directed to fire at new targets.

Simultaneously, Hohenlohe informed his subordinates that he considered accuracy more important than speed, an item of interest his commanders quickly picked up on. Shortcuts were dropped from the training regimen along with the old "stopwatch drills." This not only improved accuracy, but also made more time available for teaching proper procedures.

Finally, in recognition that his subordinates were professionals with wartime experiences of their own, Hohenlohe allowed his battery commanders to experiment with different techniques for training and firing. The best of these were then adopted by the regiment as a whole.

As an example, having built a small railway to carry moving targets, Hohenlohe discovered heated differences among his officers as to the best method of engaging a moving body of troops. He, therefore, allocated each battery 20 rounds and allowed them to fire at the "mover" in any way they saw fit, while all involved observed. By the time this exercise was over, the officers of the regiment agreed on which technique was most effective, and the regiment trained in that technique from then on.

Hohenlohe combined common sense, wartime experiences, experimentation and a desire to develop battle-focused training into a superb training program. Moreover, he was lucky enough to belong to an

army that had the professionalism to openly recognize its own faults, even in the afterglow of a successful war, and the wisdom to provide the resources needed to correct them.

But perhaps Hohenlohe's greatest asset was his ability to narrow the unit's training focus. As he put it, the primary mission of the artillery could be stated in one word, three phases: First "hit," in the second "hit" and third "hit" (*Letters*).

## Redeeming the Artillery

How successful Hohenlohe was may be gauged by the results shown the next time he took his regiment to war. In 1870, tensions between Prussia and the French Empire led to war. For most of the summer, Prussian armies drove the French back across northeastern France.

Prussian tactical superiority stemmed from, among other things, the accuracy of its artillery. Time and again, the French guns were driven from the field by superior counterbattery fire, leaving the French infantry to be torn apart, unsupported by its own canister and shell.

One particular incident illustrates what a powerful instrument the Prussian artillery became in the hands of skilled gunners. On the first day of September 1870, the Prussians and their German allies brought the last of the Imperial French armies to bay in the low hills surrounding the fortress city of Sedan. Hemmed in on three sides, the French were gradually bludgeoned to death by what one surviving officer called "Five kilometers of German artillery" (Fairfax Downey *Cannonade*, New York, 1966).

Hohenlohe and his gunners were there. His regiment took part in the cannonade,

deployed along the northeastern side of the ring. As the battle reached its climax, the French lines began to give way, and the enemy fell back into the cover of a large patch of woods known as the *Bois de la Garenne*.

Hohenlohe shifted his batteries to cover all possible routes of escape from this temporary shelter to prevent the French from withdrawing to the safety of the fortress walls. His guns drove back every French attempt to emerge from the woods while systematically deluging the forest with fire.

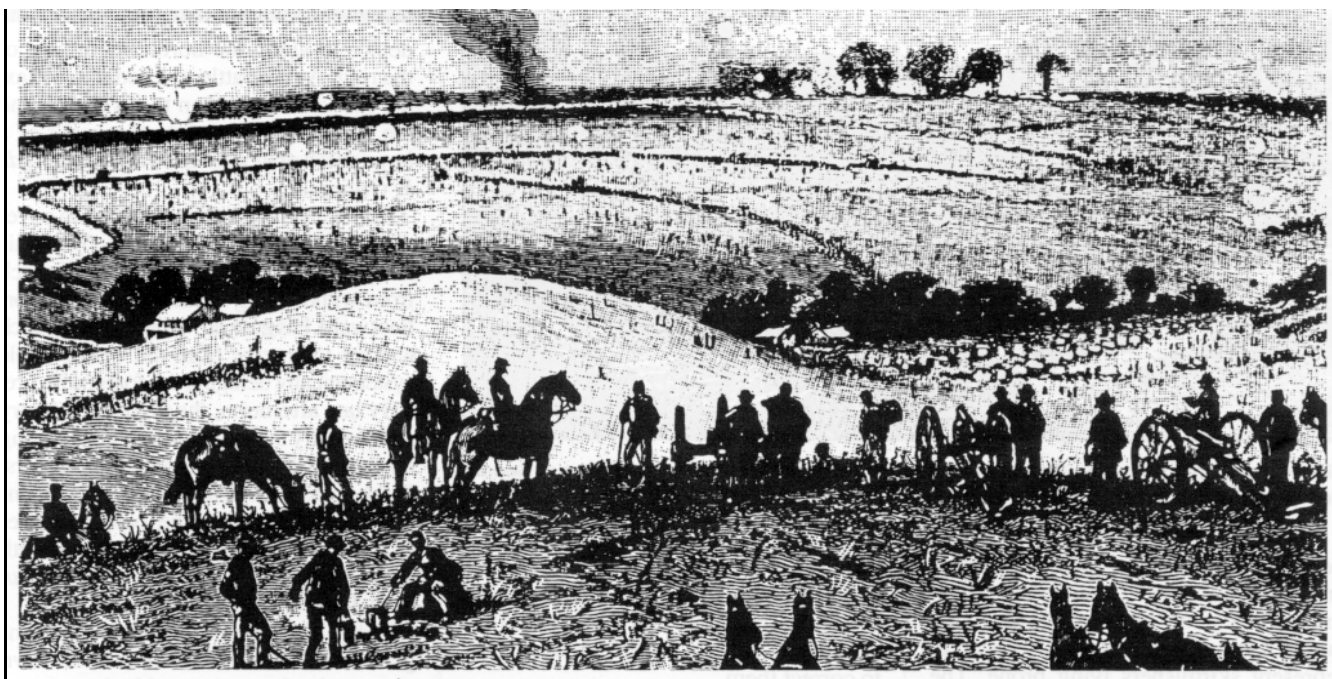
By late afternoon, the German infantry swept easily through the woods, rounding up thousands of demoralized defenders. In the words of Michael Howard, a distinguished historian of the battle, "Never before had gunfire been used in war with such precision" (*The Franco-Prussian War*, London, 1989).

Today, Prince zu Hohenlohe-Ingelfingen is little remembered outside his own country, but he was arguably the greatest gunner of the late 19th century. His works on artillery became required reading for most artillerymen of the age.

Despite the fact he lived and fought at a time when guns were dragged by horses rather than engines, Hohenlohe's books still are valuable to today's officers. They can teach us how to learn from the last war to prepare for the next. And more specifically, Hohenlohe reminds us of the importance of being battle-focused, both in our training and TTP. Such a focus makes wars winnable.



**Captain Steven J. Eden, Armor, won First Place in the US Field Artillery Association's 1992 History Writing Contest with this article. He is an Instructor in the Department of History, US Military Academy at West Point. Captain Eden's other experience includes serving in the 24th Infantry Division (Mechanized), Fort Stewart, Georgia, as a cavalry platoon leader, troop executive officer and aide-de-camp. After attending the Armor Officer Advanced Course at Fort Knox, Kentucky, he served as a tank company commander and headquarters and headquarters company commander in Germany. Captain Eden is a graduate of the Combined Arms and Services Staff School at Fort Leavenworth, Kansas, and holds a Master of Art in History from the University of Wisconsin at Madison.**



## ***The Battle of Antietam: The Creation of Artillery Hell***

by Major Albert A. Mrozek, Jr.

*Though the Union and Confederate artilleries each had advantages and disadvantages in the Battle of Antietam in September of 1862, the artillery with the most initiative and superior fire support coordination prevailed. That artillery persevered, though outnumbered, and withstood counterbattery Hell, though the enemy's execution of the missions was classic. The prevailing artillery's leaders had more quickly learned organization and command and control lessons from previous campaigns, making their guns more agile to lessen the effects of the enemy's massed fires and more responsive with close support.*

At the outset of the Civil War, both the Union and Confederate armies grappled with the problem of employing large artillery forces effectively and efficiently. During the first year of the war, both armies attempted to solve the problem by implementing artillery organizational and command and control modifications.

By 1862, the Army of Northern Virginia had organized its artillery into battalions under the command of field grade chiefs of artillery. The improved fire support coordination afforded by this innovation

offset the inferiority of Confederate artillery at the Battle of Antietam and may well have saved the Confederate Army from defeat in that battle.

Before 1861, artillery in the United States consisted of individual batteries scattered throughout the country. As a result, artillery expertise had diminished to little more than the technical aspects of managing a battery. Tactics had reverted to the pre-Napoleonic stage of assigning batteries to brigades and even sections to regiments (Jennings C. Wise, *The Long Arm of Lee*, J.P. Bell Company, Lynchburg,



Virginia, 1915). In effect, artillery had become crew-served weapons for the infantry instead of a true combat arm.

As both sides organized large armies with sizeable artillery forces, officers turned to the Napoleonic model of organization and tactics. Napoleon created groups of artillery for his divisions and a mass of reserve artillery for the entire army. The army commander could commit the reserve artillery at the critical time and place in the battle to blast a hole in the enemy infantry ranks. The French infantry then exploited the breach (Wise). Under this system, French artillery was a potent offensive weapon.

Improvements in armaments, however, precluded the direct adoption of the Napoleonic model. The increased range of rifled small arms meant artillery could no longer close within canister range of

***Field Artillery***

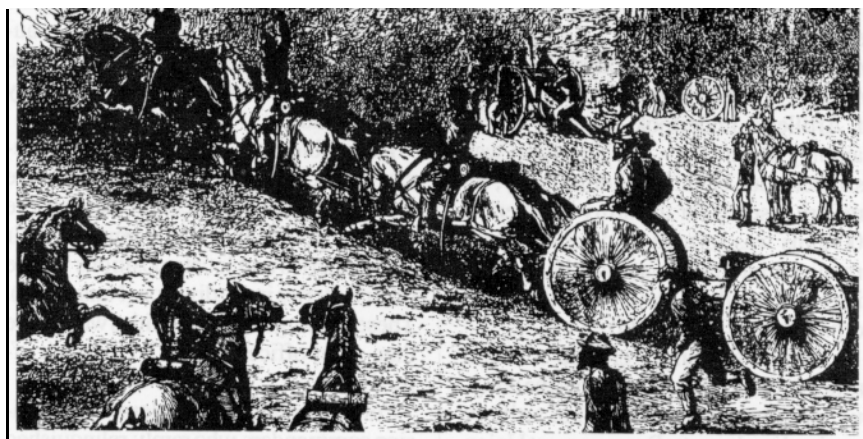
the infantry ranks. The maximum effective range of canister was 300 meters, but the rifled Civil War musket could hit a target at 500 meters (L. Van Loan Naisawald, *Grape and Canister*, Oxford University Press, New York, 1960).

At the same time, rifling increased artillery ranges for shell projectiles. Rifled guns had a wider zone of fire, so dispersed pieces could now mass fire. This development made it inefficient to hold a group of guns out of action until the critical time in the battle (Wise).

Combat experience eventually produced a doctrine for artillery. When on the offense, artillery concentrated on the enemy's artillery. In the defense, the enemy's infantry became the primary target. In either case, massed fire coordinated with the maneuver of infantry was the key to success (Naisawald).

## Confederate Developments

In the summer of 1861, Colonel E. P. Alexander organized five batteries of artillery into a battalion, an artillery formation previously unknown (Wise). Despite Alexander's persistent advocacy of the tactical utility of artillery battalions, old habits died hard. When Brigadier General William N. Pendleton was appointed Chief of Artillery of the Confederate Army in Virginia, he promptly assigned batteries to brigades (Wise).



A Battery Going into Action at the Battle of Antietam. The Union and Confederate artilleries faced each other along Antietam Creek near Sharpsburg, Maryland, in September 1862.

At the First Battle of Bull Run (July, 1861), Pendleton's successful control of the massed fires of three batteries showed both the practicality of Colonel Alexander's ideas and the value of an artillery reserve (Wise). As a result, the Confederate Army was reorganized to field two battalions of reserve artillery in February 1862.

The ineffectiveness of the Confederate artillery organization and command and control became apparent on the Virginia Peninsula during the Peninsula Campaign (17 March to 2 September 1862). The infantry commanders who controlled the direct support artillery overlooked coordination and thought in terms of pressing the battle with their troops. Also, the artillery frequently moved at the rear of the march column (Wise). When enemy contact was made, the artillery had no time to provide preparation or counterbattery fires before its fields of fire were masked by the advancing infantry (Wise).

In his memoirs, Colonel Alexander wrote, "Perhaps our greatest deficiency at this period was in the artillery service. None of our batteries were combined into battalions, but each infantry brigade had a battery attached to it. There were no field officers of artillery charged with combining batteries and massing them to concentrate heavy fire upon important points" (Wise).

General Pendleton also noted the deficiencies. When Robert E. Lee assumed command of the Confederate Army in June 1862 and reorganized it, many of Pendleton's recommendations were implemented. In addition to the general army reserve, division reserves were created. Additionally, division chiefs of artillery were given control of all the

artillery in their divisions, although brigade commanders still controlled batteries when they were assigned to brigades (Wise).

Between Second Bull Run and the Maryland Campaign, a second major artillery reorganization took place. An artillery battalion was attached to each division. A reserve was planned for each corps, and a general reserve was maintained for the army.

To improve command and control, each battalion, whether divisional, corps or general reserve artillery, was placed under the command of a field grade officer. In the divisions, the field grade officer commanding the battalion was also the division chief of artillery, the principle artillery advisor to the commander (Wise). The combined artillery expertise and command authority of the chief of artillery made him an effective fire support coordinator for the division.

These changes were not fully implemented for the Battle of Antietam. D.R. Jones' division had only one battery of artillery, and the two brigades in Walker's division still had their own batteries (Jay Luvaas and Harold W. Nelson, *The US Army War College Guide to the Battle of Antietam*, Harper and Row, New York, 1987). Also, the order of battle shows no reserve battalion for Jackson's corps. However, Jeb Stuart's horse artillery, under Chief of Artillery John Pelham, capably filled the role of Jackson's reserve artillery (Luvaas and Nelson).

## Union Developments

When General George B. McClellan assumed command of the Army of the Potomac in July 1861, his artillery batteries were assigned to brigades and

<b>Longstreet's Corps</b>	
McLaw's Division	<b>1 Battalion of 5 Batteries</b>
Anderson's Division	<b>1 Battalion of 4 Batteries</b>
Jones' Division	<b>1 Battery</b>
Walker's Division	<b>2 Batteries (1 per Brigade)</b>
Hood's Division	<b>1 Battalion of 3 Batteries</b>
Evan's Brigade	<b>1 Battery</b>
Corps Artillery	<b>1 Battalion of 4 Batteries</b>
	<b>1 Battalion of 6 Batteries</b>
<b>Jackson's Corps</b>	
E well's Division	<b>1 Battalion of 3 Batteries</b>
A.P. Hill's Division	<b>1 Battalion of 4 Batteries</b>
Jackson's Division	<b>1 Battalion of 7 Batteries</b>
D.H. Hill's Division	<b>1 Battalion of 4 Batteries</b>
<b>Cavalry Division</b>	
	<b>1 Battalion of 3 Batteries</b>
<b>Reserve Artillery</b>	
	<b>1 Battalion of 5 Batteries</b>
	<b>1 Battalion of 4 Batteries</b>

Artillery Organization for the Army of Northern Virginia at the Battle of Antietam. This organization doesn't include the batteries at Harper's Ferry or those guarding the Potomac fords.

regiments (Naisawald). As part of McClellan's reorganization of the army, Major William F. Barry, the Union Chief of Artillery, undertook the task of revamping the artillery. Each division was assigned four batteries. Additionally, an artillery reserve for the army numbering 100 guns was formed. If divisions were organized into corps, at least half of the divisional artillery would constitute the corps reserve (Naisawald).

McClellan's changes created a sound artillery organization throughout the army, but the command and control of artillery remained inadequate. Because most Union field grade artillery officers were inexperienced with artillery tactics above the battery level, McClellan decided to grant

his chiefs of artillery administrative authority only. Furthermore, no staffs were authorized to assist the chiefs of artillery (Naisawald).

The problem was further magnified because the division chiefs of artillery were also battery commanders. In battle, these officers were required to command their own batteries and locate positions for the other batteries in the division (Naisawald). These two huge responsibilities were more than most officers could accomplish effectively.

Compounding the problem were division commanders who rarely relinquished control of their batteries to their chiefs of artillery. The old system of infantry commanders controlling the artillery

remained alive and well in the Union Army.

Even after Union field grade artillery officers gained experience during the Peninsula Campaign, McClellan did not authorize higher artillery staffs and commands. These positions were not considered necessary because they were perceived to be unneeded in the past (Naisawald).

As the Army of the Potomac marched toward western Maryland to meet the invading Confederate Army, it absorbed the former army of John Pope. This act created a new artillery problem. The two corps (I and XII) added to McClellan's army had all of their batteries organized into a corps artillery (Luvaas and Nelson). Brigadier General Henry J. Hunt, McClellan's new chief of artillery, reassigned the batteries of I Corps to the divisions, but the organization of XII Corps was left intact (Naisawald).

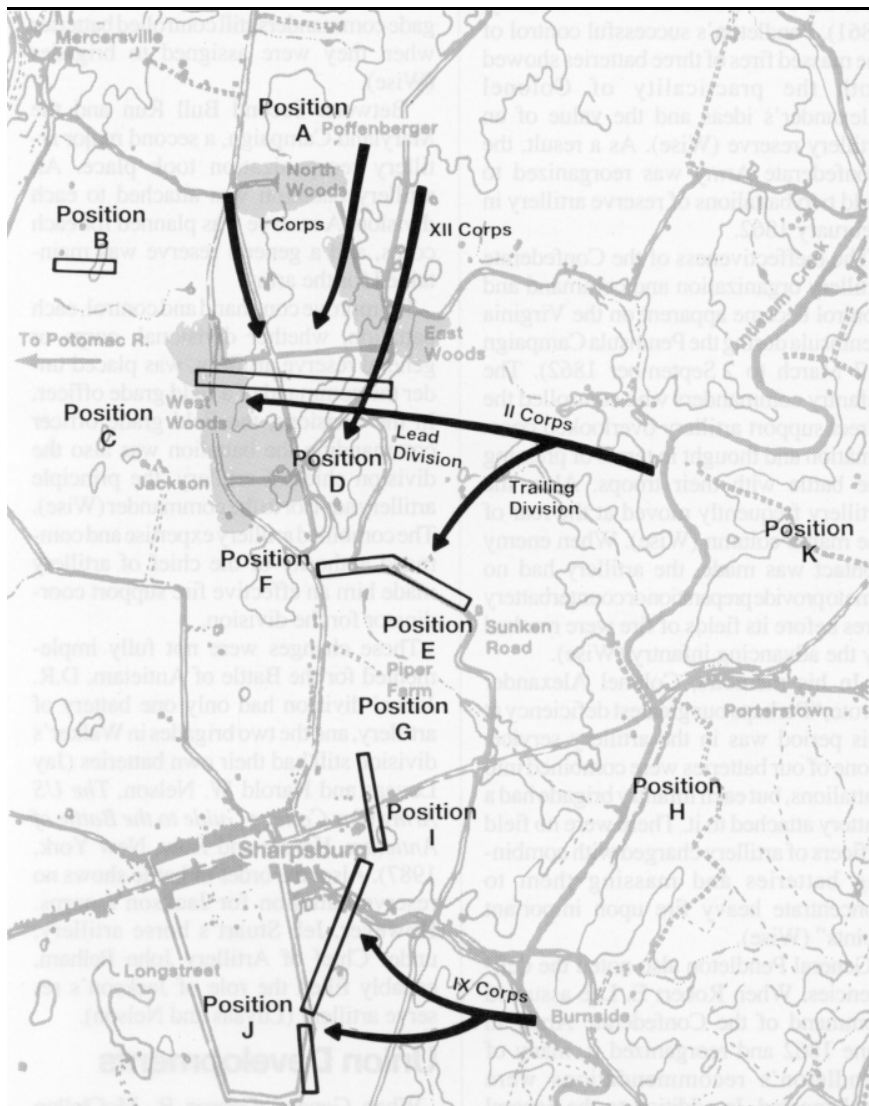
## Artillery at Antietam, 16-17 September

The Confederate position (see map) was organized with Jackson's corps defending north of Sharpsburg from the West Woods to the Sunken Road. Longstreet's corps defended south of Sharpsburg from the Boonsboro Turnpike on a line that generally paralleled the Harper's Ferry Road (Steven W. Sears, *Landscape Turned Red*, Ticknor and Fields, New Haven, 1983).

The reinforced horse artillery of Jeb Stuart occupied Nicodemus Hill (Position B on the map). From here they could fire into the flank of the attacking I Corps. More importantly, the guns could cover the area between the hill and the Potomac River and secure the Confederate northern flank. A mass of I Corps artillery (augmented later by artillery of the XII Corps) on the high ground north of the Poffenberger farm (map Position A) accomplished the same function for the Union army (Luvaas and Nelson).

The Union offensive consisted of successive but uncoordinated attacks against Jackson's position by I Corps at 0600, XII Corps at 0730 and II Corps at 0900. The IX Corps crossed Antietam Creek by 1300 and pressed an attack against Longstreet's corps, beginning at approximately 1500.

The Union Army had a superior artillery force at the battle in both numbers and quality. The Army of the Potomac had 293 guns present at Antietam. The Confederate Army had an estimated 246 guns



The Army of the Potomac engages the invading Army of Northern Virginia at the Battle of Antietam, 16-17 September 1862.

Unit	Batteries
<b>I Corps</b>	
1st Division	4
2d Division	3
3d Division	3
<b>II Corps</b>	
1st Division	3
2d Division	2
3d Division	N/A
Unattached	3
<b>V Corps</b>	
1st Division	3
2d Division	4
3d Division	2
<b>VI Corps</b>	
1st Division	4
2d Division	3
1st Division (IV Corps)	4
<b>IX Corps</b>	
1st Division	2
2d Division	2
3d Division	2
<b>Kanawha Division</b>	<b>2 (1 per brigade)</b>
Unattached	3
<b>XII Corps</b>	
Corps Artillery	7
<b>Cavalry Division</b>	<b>6</b>
<b>Artillery Reserve</b>	<b>7</b>

Artillery Organization for the Army of the Potomac at the Battle of Antietam.

(Joseph Mills Hanson, "A Report on the Employment of the Artillery at the Battle of Antietam, Maryland," National Park Service, Petersburg, Virginia, 1940).

In terms of rifled long-range guns (with effective ranges greater than 2,000 yards), the Union army appears to have outnumbered the Confederate army by more than two to one. The Union artillery had a total of 166 Parrotts and three-inch rifles: 56 percent of the force. Of the 194 guns of known calibers in the Confederate army, 82 (42 percent) were long-range pieces.

The preferred gun for the division artillery was the 12-pounder Model 1857 Napoleon. The Napoleon was light, maneuverable and capable of firing all major types of munitions of the era. Employing canister, the Napoleon was the most effective artillery weapon against infantry (Naisawald). The Union army fielded 108 Napoleons: 37 percent of its force. The Confederates had only 27. Conversely, approximately 23 percent of the Confederate artillery consisted of the obsolete six-pounder smoothbore (Dean S. Thomas, *Cannons, An Introduction to Civil War Artillery*, Thomas Publications, Gettysburg, Pennsylvania, 1985).

General Hunt took advantage of both the Union superiority in long-range guns and the terrain to provide punishing

counterbattery fire. Hunt positioned the reserve artillery, along with batteries of Parrotts and three-inch rifles from V and VI Corps on the bluffs east of Antietam Creek (map Positions H and K). These 68 long-range guns had fields of fire that enfiladed parts of the Confederate lines. More importantly, they covered most of the hills and ridges that were likely Confederate artillery positions.

The severe counterbattery fire inflicted by these guns caused at least one Confederate battalion commander to remember it as Hell. Stephen D. Lee in a letter to Colonel Alexander said, "Pray that you may never see another Sharpsburg. Sharpsburg was artillery Hell" (Sears).

As intense as the Union counterbattery fire was, it was not completely effective in silencing the opposing artillery. Confederate commanders dispersed their batteries to lessen the effects of the massed fire and concealed them in defilades when taken under fire. When the counterbattery fire shifted, the batteries sprang back into action (Wise).

Although the Union army had more artillery on the field, shortcomings in its

organization allowed the Confederate army to have local superiority in close support artillery during the attacks of the I, XII and II Corps. When I Corps attacked Jackson's corps, it had 48 guns providing close support facing 68 Confederate guns. The arrival of XII Corps brought 20 more Union guns onto this part of the battlefield (Naisawald). II Corps had 40 guns (Hanson) to face the total of 72 Confederate guns in the vicinity of the Sunken Road (map Positions F and G) (Wise).

Sufficient artillery was often not available to support the Union infantry due to the poor artillery command system. The XII Corps artillery appears to have followed the infantry onto the battlefield. It assumed a defensive posture on the western edge of the East Woods. No artillery was available for the lead division of II Corps when it advanced into the West Woods (Naisawald). The remaining two divisions of the II Corps had, at most, one battery to provide close support during their fight at the Sunken Road.

In contrast to the Union artillery's general inability to be at the right time and place to provide close support, the Confederate



Type of Artillery	Confederate	Union
20-Pounder Parrott Guns (Rifled)	4	30
10-Pounder Parrott Guns (Rifled)	36	42
12-Pounder Howitzers	34	14
12-Pounder Napoleons	27	108
3-Inch Rifles	40	94
12-Pounder Dahlgren Boat Howitzers	N/A	5
24-Pounder Howitzers	4	0
2.71-Inch Whitworths (Rifled)	2	0
3.5-Inch Blakelys	2	0
6-Pounder Smoothbore Guns	45	0
Guns of Unknown Calibers in 13 Batteries (Assuming 4 Guns Per Battery)	52	0
<b>Totals</b>	<b>246</b>	<b>293</b>

Artillery Totals at the Battle of Antietam. (Source: Joseph Mills Hanson, "A Report on the Employment of the Artillery at the Battle of Antietam," National Park Service, Petersburg, Virginia, 1940.)

federate artillery was characterized by a high degree of agility. For example, between the attacks of the I and XII Corps, Pelham positioned 13 artillery pieces on Hauser's Ridge (map Position C). This position could not be engaged by the Union counterbattery fire, yet Pelham was able to sweep the open ground between the North Woods and Dunker Church, thereby securing the Confederate left flank (Wise).

The Confederate artillery historian, Jennings Wise, calls Pelham's action "one of those masterstrokes by a subordinate of highly developed initiative." He further states, "...no one movement on either side bore a greater influence upon the final issue of the battle than did the advancement of Pelham's group....This was a move on the chessboard, though perhaps by a pawn, which baffled the most powerful pieces of the enemy."

A second example is S.D. Lee's continuous repositioning of his battalion to engage Union forces. He supported Jackson's infantry during the I Corps attack (map Position D) and D.H. Hill's division in the Sunken Road (map Position F) and fired on the IX Corps' advance towards Sharpsburg (map Position I). A third example occurred during IX Corps' final assault (Luvaas and Nelson). The Confederate extreme right (map Position J) consisted of a collection of guns from 10 different batteries and remnants of Toombs's brigade (Wise). Almost all these batteries had raced into position after refitting in Sharpsburg. This thin line of metal held until A.P. Hill's division arrived from Harper's Ferry.

The single event that best contrasts the strength of the Confederate artillery and

the weakness of the Union artillery in providing close support occurred at the Sunken Road. At 1230, II Corps broke through the Confederate defensive position in the lane (Sears). The Union army was on the verge of breaking the Confederate center. The left was already exhausted by the attacks of I and XII Corps. The right, depleted as divisions were sent to reinforce the left, was about to face the attack of IX Corps.

The defeat of Lee's army and, possibly, the end of the war seemed at hand. However, retreating Confederate infantrymen rallied around a single battery on the Piper farm overlooking the Sunken Road (map Position E). Other batteries arrived, increasing the number of Confederate guns to approximately 20 (Sears).

The Union infantry, completely without artillery, was unable to advance in the face of the Confederate artillery fire. Major General Israel B. Richardson, the Union commander, pleaded for artillery support, but none could be provided. Yet less than 1,500 meters to the north, seven inactive batteries with 44 guns were positioned along the edge of the East Woods (Sears). Artillery historian L. Van Loan Naisawald calls this moment "the nadir in the history of American Artillery."

## Conclusion

The Union artillery employment during the battle is a classic example of the counterbattery mission. The Confederate artillery employment demonstrates how initiative and superior fire support

coordination can compensate for an inferior artillery force.

The larger lesson lies in the development of each army's artillery organization and command system before the battle. Both armies confronted the same challenge: to employ large masses of artillery effectively and efficiently.

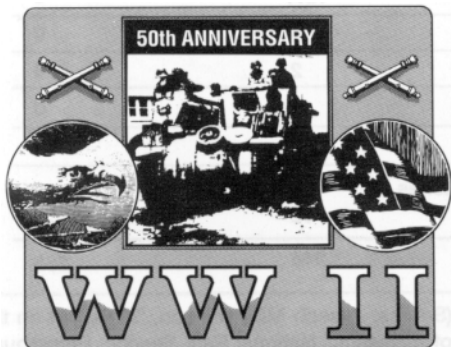
The Confederate leadership applied the lessons learned from previous campaigns and battles more readily. They were quicker to divorce themselves from the outmoded practices of the past. As a result, the Confederate artillery organization and command system made it more agile and responsive. In turn, it was able to accomplish the close support mission better than the Union artillery during the Battle of Antietam and out performed a superior force.



**Major Albert A. Mrozek, Jr., won Second Place in the US Field Artillery Association's 1992 History Writing Contest with this article. He's Assistant Professor of Military Science, Army Reserve Officer Training Corps at West Virginia University. Major Mrozek's other experience includes serving as the Commander of Headquarters and Headquarters Battery, 2d Battalion, 3d Field Artillery, 3d Armored Division in Germany; S1 of the same battalion; and battalion Fire Direction Officer and Assistant S3 for 3d Battalion, 8th Field Artillery, 18th Field Artillery Brigade, Fort Bragg, North Carolina. Major Mrozek holds a Bachelor of Science from the US Military Academy at West Point and a Master of Public Administration from West Virginia University.**

## World War II, July and August 1942

*In recognition of the 1992 50-Year Anniversary of World War II, the following is a brief chronology of significant wartime events in July and August of 1942.*



**25 July:** Combined Chiefs of Staff agreed upon command setup for Operation Torch.

**7 August:** US Marines landed on Guadalcanal.

**8 August:** President Roosevelt and Prime Minister Churchill agreed on General Dwight D. Eisenhower as Commanding General, European Theater of Operations and as Commander of Operation Torch.

**17 August:** US Eighth Air Force conducted the first attack against a European target (Rouen-Sotteville, France).

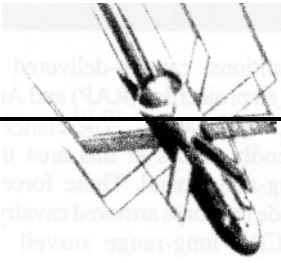
**19 August:** Canadian and British forces raided Dieppe, France.

**20 August:** US Twelfth Air Force was activated at Bolling Field, Washington D.C.

**24 August:** Battle of the Eastern Solomons began and continued to 25 August.



# F S C M



## on Future Battlefields

by Major William B. Carlton

**S**mart weapons provide future commanders increasingly large areas of engagement and lethality. Our evolving AirLand Battle doctrine is designed to take maximum advantage of these new systems' capabilities. But our current fire support coordinating measures (FSCM) may not provide the adequate degree of safety or responsiveness that combined arms commanders will demand.

This article identifies some of the potential problems future fire support coordinators (FSCOORDs) will face and outlines some potential solutions for those problems. The article is intended to stimulate thought in the fire support community about the adequacy of current fire support doctrine in light of rapidly emerging smart weapons technology.

Modern technology on the battlefield will bring an entirely new set of problems and perspectives to warfighting. As Captain Kevin B. Smith said in his article "Back to the Trenches" for *Military Review*, "We are approaching a technological juncture where point targets can be immediately sensed and then quickly destroyed at extreme ranges" (August 1990, Command and General Staff College, Fort Leavenworth, Kansas).

We've had only a primitive glimpse of what is to come during Operation Desert Storm. As the ranges, engagement areas (footprints) and lethality of modern weapons increase, it will be increasingly necessary to quickly and safely employ our smart weapons. This is where the problems start. For the FSCOORD, speed and safety are often conflicting goals.

Some reports from the field indicate that the procedures used for clearing fires during Desert Storm were cumbersome and not always executed in a timely manner. For example, one artillery battery fired less than 250 rounds during the 100-hour war. This volume of fire is far short of that which should be expected from a direct support artillery battery during a high-intensity battle. A number of reasons may have contributed to this low volume, but one factor that should be

examined closely is the impact of FSCM on the responsiveness and timeliness of fire support.

Future commanders can't make the most of the large footprints or the lethality of smart weapons if our FSCM don't facilitate their employment. We can't use our modern smart weapons effectively if restrictive FSCM make fires untimely or if permissive measures fail to account for the weapons' increased effects. This article proposes solutions to several potential problems that may arise using the current doctrinal FSCM on the future battlefield.

### General

Procedural control measures are standard, and doctrinal FSCM which, when followed, provide a framework for timely fire support. They're categorized as being either permissive or restrictive and are explained in detail in *FM 101-5-1 Operational Terms and Symbols* and the FM 6-20 series of fire support manuals.

FSCM are portrayed graphically on an operations or fire support overlay. They require a uniform doctrinal definition to ensure all branches and services understand and employ them consistently. They also provide an acceptable degree of safety if the tactical situation depicted on the operations overlay is timely and accurately updated and if everyone on the battlefield is aware of their locations relative to the active control measures.

The update of overlays and awareness of the tactical situation is more manageable in a linear environment than when engagements occur simultaneously throughout the depth of the nonlinear battlefield with a variety of weapons systems and munitions.

The commander and FSCOORD must weigh the trade-offs between timeliness and safety when deciding which FSCM are most appropriate in a given tactical scenario. This is the "military art" that commanders and FSCOORDs constantly strive to apply.

Ideally, they should fight a battle using a minimal number of FSCM (see Figure

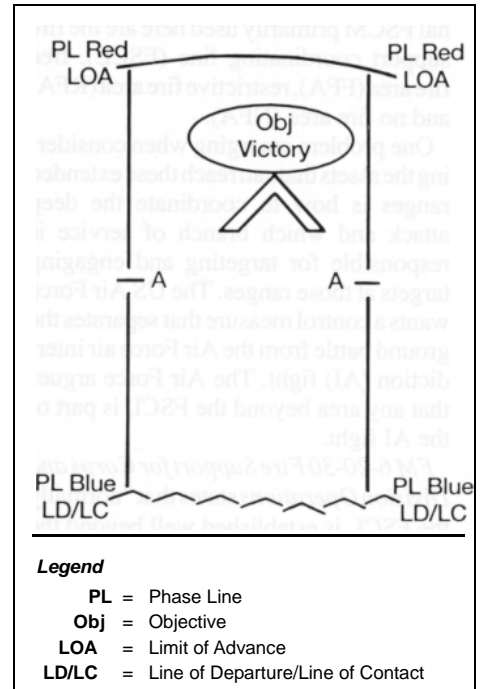


Figure 1: Example of Minimal FSCM. Though METT-T drives the degree of control needed on a battlefield, ideally the commander and his FSCOORD will fight using a minimum number of FSCM.

1). But every tactical operation is different, and minimizing coordination measures is rarely possible. As in other aspects of tactical design, mission, enemy, terrain, troops and time available (METT-T) drive the degree of control needed. The impact of smart weapons on the modern battlefield further complicates matters.

While there certainly will be other areas that require further analysis regarding future employment of FSCM, this article focuses on three areas. Each corresponds to the range bands of smart weapons. The long-range band extends up to 200 kilometers forward of friendly forces; the transitional-range band extends from 15 to 40 kilometers; and the short- and medium-range band extends from the location of friendly forces to a depth of 15 kilometers.

## Long-Range Band

Long-range band targets, from 40 to 200 kilometers forward of friendly forces, normally will be engaged by corps-controlled weapons systems. The Air Force, Army tactical missile system (Army TACMS), sea-launched missiles and Apache attack helicopters are the primary systems that can engage targets in this area. The doctrinal FSCM primarily used here are the fire support coordinating line (FSCL), free fire area (FFA), restrictive fire area (RFA) and no fire area (NFA).

One problem emerging when considering the assets that can reach these extended ranges is how to coordinate the deep attack and which branch of service is responsible for targeting and engaging targets at those ranges. The US Air Force wants a control measure that separates the ground battle from the Air Force air interdiction (AI) fight. The Air Force argues that any area beyond the FSCL is part of the AI fight.

*FM 6-20-30 Fire Support for Corps and Division Operations* states that "normally the FSCL is established well beyond the range of cannon and multiple rocket Field Artillery systems to provide sufficient depth to shape the [deep] fight." Yet the same field manual also states that the FSCL "should be located *beyond* [emphasis added] the area in which the corps intends to shape its deep operations fight." The placement of the FSCL is intended to permit "the corps and its...supporting units to expeditiously attack targets of opportunity beyond the FSCL."

Under previous system capabilities, an FSCL placed at approximately 40 kilometers forward of friendly forces could satisfy these requirements. The fielding of the joint surveillance and target attack radar system (Joint STARS), coupled with Army TACMS and the deep-attack capability of Army attack helicopters, has caused a problem. It has become necessary to coordinate the use of these attack systems with the air component when they are employed at depths that were formerly the exclusive domain of the Air Force. As seen in Desert Storm, the FSCL is no longer an effective permissive control measure.

In terms of future battlefields, the FSCL has a doctrinal definition that's no longer relevant to current tactics. If the FSCL is employed 40 kilometers deep (the "current" limit of the corps deep battle) and all deep fires must be cleared with the air component, the corps is

severely restricted in its ability to employ its modern technology to operational depths. This leads to a delay in attacking targets and is not sufficiently responsive to the ground commander's plan. On the other hand, if the ground force shapes its deep battle by placing an FSCL even 100 kilometers deep, the Army has systems that can range beyond the FSCL, and the requirement for coordination still exists.

There are several potential solutions to this problem. First, the FSCL should remain a permissive control measure. It should generally define the "rear edge" of the corps deep battle.

Next, the forward edge of the corps deep battle should be defined by using the reconnaissance and interdiction planning line (RIPL). The RIPL is a technique already understood and used in Europe. The RIPL "will usually be located...coincident with the corps limit of intelligence and planning responsibility. Short of the RIPL, the corps commanders have the primary responsibility for nominating targets [hence, engaging targets] which have a direct bearing on the land battle" (*AAFCE Manual 80-2 Offensive Air Support*, Headquarters, Allied Air Forces Central Europe, Germany, 15 March 1986).

Finally, other existing coordination measures (FFA, RFA and NFA) can be liberally used to control the Air Force and Army attack of specific areas short of the RIPL but beyond the FSCL.

Some of the benefits of this recommendation are that the FSCL can still be used as a meaningful permissive FSCM. The RIPL can be used as the demarcation line between responsibility for execution of air and ground operations and, thus, satisfy the desires of the air component.

The theater commander should adjudicate these responsibilities for his component commanders. Use of both the FSCL and RIPL facilitates that effort.

## Transitional-Range Band

The transitional-range band, the next area where potential fire support coordination problems exist, extends from approximately 15 to 40 kilometers forward of friendly forces. Based on the previous discussion, this is likely to become the forward area of the corps close battle and notionally corresponds to the area of the division deep battle. Weapons systems that can be employed are Air Force close air support (CAS), multiple launch rocket system

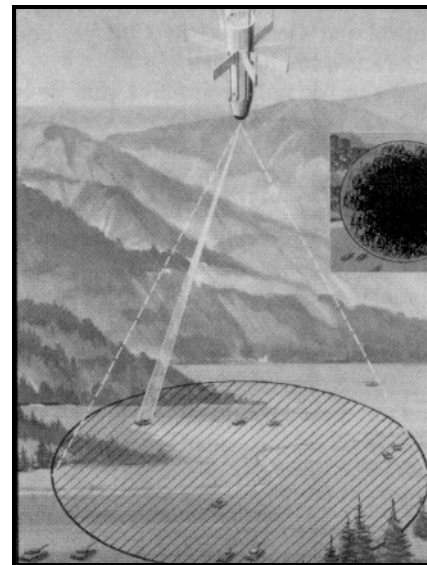
(MLRS)-delivered munitions, cannon-delivered rocket-assisted projectiles (RAP) and Army attack helicopter assets. There will be more friendly forces in this area than in the long-range band. These forces may include the corps armored cavalry regiment (ACR), long-range surveillance units (LRSUs) and special operations forces (SOF). Normally, these forces will not become decisively engaged in this area.

There are two primary problems that exist in the transitional-range band. They are the separation of forces from engagement by friendly fires and the possible duplication of effort between the division and corps deep-battle efforts.

The primary FSCM that affects this area is the coordinated fire line (CFL). According to FM 6-20-30, the CFL "is a line beyond which...indirect fire means may fire at any time. The purpose of the CFL is to expedite the attack of targets beyond it."

The problem the division planners face is deciding where to place the CFL to best streamline the division's attacking deep targets without compromising safety or duplicating the efforts of the corps. FM 6-20-30 states the CFL can be "located as close to the establishing unit as possible without interfering with maneuver forces." But on the nonlinear future battlefield, there may be many forces continuously flowing into and out of the area forward of the division zone.

The solution of future commanders may not be to redefine the CFL, but to change



FSCORDs face a significant challenge in clearing fires as weapons systems' footprints become larger.

maneuver deconfliction. Maneuver forces that are flowing into and out of engagements might be deconflicted similarly to the system currently used to deconflict air assets.

Much as air corridors and airspace coordination areas (ACAs) define cleared air space, "ground corridors" (GCs) or "ground space coordination areas" could be developed that offer equal flexibility. These control measures could be sequentially activated and deactivated as forces enter and leave terrain. Ultimately, a well-placed CFL, coupled with air and ground corridors and other doctrinal FSCM, could allow the division commander to design and execute his deep fight with minimum delay. These measures still would provide a high degree of safety for maneuver forces.

Another potential benefit is that the area between the division CFL and the corps FSCL also might be used to define the area of the division deep battle. This allows the division commander to better focus his deep collection and targeting efforts.

## Medium- and Short-Range Band

The medium- and short-range band extends to 15 kilometers forward of friendly forces. This area corresponds to the division close battle. All fielded weapons systems could be employed in this band.

Within this area, friendly and enemy combat forces often become intermingled in direct-fire engagements. The impact of smart weapons in this area may be the greatest because modern weapons are unable to differentiate friend from foe. Desert Storm showed that even man-in-the-loop systems, such as Hellfire, had this problem. If coalition warfare is the norm for the future, then this problem may become more acute—especially for highly lethal fire-and-forget weapons.

A major problem will be how smart weapons will be employed in this band, given that the footprints for some of the autonomous smart weapons are very large. This fact alone will redefine the current concept of "danger close" and the procedures for clearing fires near friendly troops.

Guided munitions will face similar target identification problems. Any optical acquisition system is limited by the quality of the optics and the skill and experience of the operator. This will become a bigger problem as optical systems acquire targets out to a range of 10 kilometers. Unless the man-in-the-loop can positively

identify the target, the increased range of his weapon will be wasted.

The solution to the target identification problem might be minimized by using procedures similar to the following. We could create a permissive coordination measure—"smart weapon engagement area" (SWEA)—to separate friendly forces from the effects of smart munitions (see Figure 2). The SWEA would be an area where it's safe to employ smart weapons. Similar to a FFA, we only would use a SWEA in a location not intended to be occupied by maneuver forces and where it wouldn't hinder friendly maneuver forces in the attack.

A second solution might be to use a technique such as a "minimum safe line" (MSL) for autonomous smart weapons. No smart weapons would be employed

short of the MSL. An MSL would speed the processing of calls-for-fire for autonomous smart weapons. This technique would not preclude the processing of calls-for-fire inside the MSL but would provide commanders and FSCORDs an efficient guideline for when and where smart munitions may be employed during the close fight. The National Training Center, Fort Irwin, California, is already using this restrictive FSCM with units having few problems providing responsive fire support.

No matter which procedures are used, the commander and FSCORD must consider the effects of the autonomous smart munitions well in advance of their intended employment. If not, the commander stands to lose these resources to assist his fight. It's unlikely the effects will be

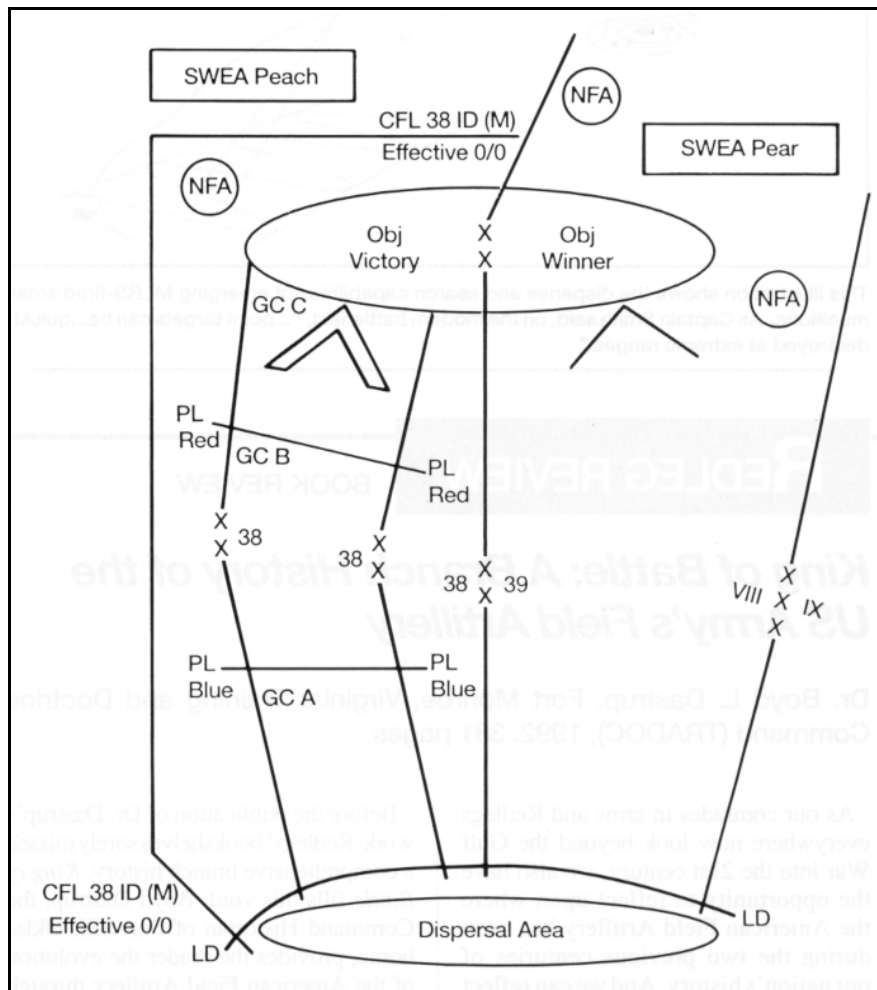


Figure 2: Example of Medium- and Short-Range Band SWEA. This coordination measure proposed for the division close battle would be a permissive one used to separate friendly forces from the effects of smart munitions. Note the use of ground corridors (GCs) that the commander can activate and deactivate to protect his forces as they enter and leave terrain.

deconflicted during the battle because of delays caused in *positively* locating all friendly ground forces near the target area.

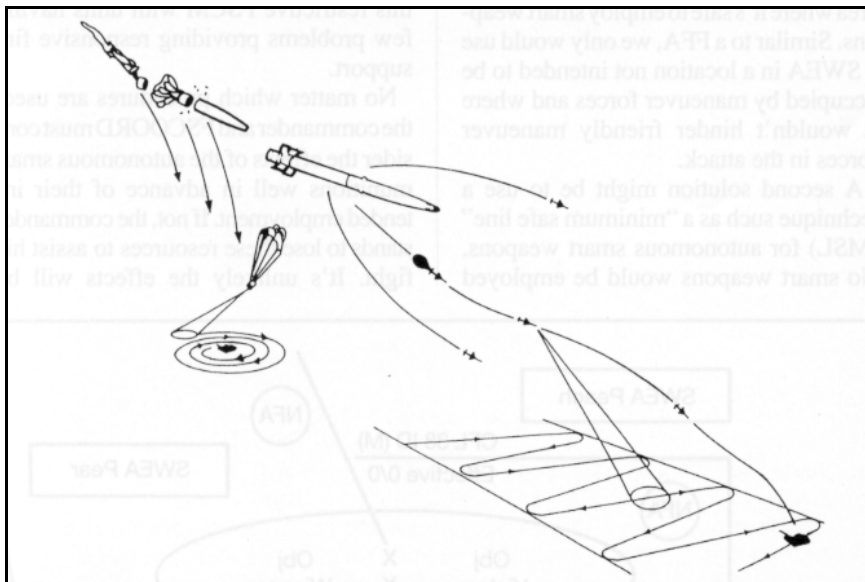
## Conclusion

Commanders and FSCOORDs at all levels will face many challenges to correctly employ smart weapons. These challenges will be further complicated by

the changing doctrine used to employ ground forces. While there may be no need to develop entirely new FSCM, future FSCOORDs must carefully consider the implications of using the current doctrinal coordination measures in light of our smart weapons' significant advances in footprint, range and lethality.

This article has addressed only a few of the potential problems we may face in

trying to coordinate fires on the future battlefield. But regardless of the solutions, evolving doctrine and the amazing capabilities of future weapons demand the fire support system remain responsive and safe. Above all, our system must support the mission.



This illustration shows the dispense and search capabilities of emerging MLRS-fired smart munitions. As Captain Smith said, on the modern battlefield, "...point targets can be...quickly destroyed at extreme ranges."

Major William B. Carlton is currently studying at the University of Texas at Austin for a Doctorate of Operations Research. His previous assignment was as a Materiel Systems Analyst (Fire Support Systems) in the Program Analysis and Evaluation Directorate, Office of the Chief of Staff of the Army, Washington D.C. He has served as S3 of the 1st Battalion, 41st Field Artillery, and Brigade Fire Support Officer (FSO) for the 1st Brigade, 24th Infantry Division (Mechanized) at Fort Stewart, Georgia. In Germany, he commanded C Battery, 1st Battalion, 80th Field Artillery (Lance). He also has served as an assistant Professor in the Department of Engineering at the US Military Academy at West Point. Major Carlton is a graduate of the Infantry Officer Advanced Course, Fort Benning, Georgia, and the Command and General Staff College, Fort Leavenworth, Kansas. He holds a master's degree in Operations Research from Georgia Institute of Technology in Atlanta.

## REDLEG REVIEW

### BOOK REVIEW

## ***King of Battle: A Branch History of the US Army's Field Artillery***

Dr. Boyd L. Dastrup. Fort Monroe, Virginia: Training and Doctrine Command (TRADOC), 1992. 381 pages.

As our comrades in arms and Redlegs everywhere now look beyond the Gulf War into the 21st century, we also have the opportunity to reflect upon where the American Field Artillery has been during the two previous centuries of our nation's history. And we can reflect upon the Branch's history more readily, thanks to the recent TRADOC publication of Boyd Dastrup's, *King of Battle: A Branch History of the US Army's Field Artillery*.

Before the publication of Dr. Dastrup's work, Redlegs' bookshelves sorely missed a comprehensive branch history. *King of Battle* fills this void. Boyd Dastrup, the Command Historian of Fort Sill, Oklahoma, provides the reader the evolution of the American Field Artillery through the thorough examination of its artillery tactics, organization, materiel and training from the colonial period to the 1980s.

As a work of history, *King of Battle* is well-researched, organized and written.

Dr. Dastrup's book reflects countless hours of research and an effective blend of primary and secondary sources. He skillfully meshes the areas of the artillery's development into a coherent account of the American Field Artillery in war and peace. Redlegs interested in a particular period of the Branch's history will find the book's notes and bibliography of considerable value. Moreover, Dr. Dastrup's concluding remarks at the end of each chapter serve to capture succinctly the essence of each period of the artillery's evolution. His assessment of the Field Artillery's role in World War II as a member of the combined arms team particularly hits the mark.

However, institutional histories present any author some unique challenges, one of which is how to keep a lay person's interest. Consequently, there are sections of *King of Battle* where Dr. Dastrup wrote his book as though he had to choose

between getting it right historically (which he does) and making it fun to read—he chose the former. For example, the author correctly describes the decisive effects of the Union artillery that shattered Lee's army at the Battle of Malvern Hill on 1 July 1862. To bring the devastating effects of the Union artillery to life in the reader's mind, he could have taken a page from Bruce Catton to describe how of the 5,000 Confederates who littered the slopes of Malvern Hill, "enough of them were alive and moving to give the field a singular crawling effect." In short, Dastrup could have added more life to this outstanding work of scholarship.

With this minor criticism aside, what does *King of Battle* give the Field Artillery

community? First, it provides the starting point for any officer or NCO professional development program (OPD or NCOPD) that wishes to examine where our proud Branch came from and where it has been in our nation's history. Redlegs can use *King of Battle* to augment Major James J. Carafano's excellent approach, "Battle Study: A Guide Through the History of Field Artillery," found in the October 1989 issue of *Field Artillery*, and in conjunction with Brigadier General Robert H. Scales' superb look at the evolution of firepower doctrine in his 1990 work, *Firepower in Limited War* (reviewed in *Field Artillery*, February 1991).

The bottom line: *King of Battle* belongs on every Redleg's bookshelf and should

serve as the initial stop for anyone interested in gaining a perspective of the American Field Artillery, past and present. Copies of the book are available through Headquarters, TRADOC, contingent upon a second printing. Requests should be sent to the Command Historian, ATTN: ATMH, US Army Training and Doctrine Command, Fort Monroe, Virginia 23651-5026.

Dr. Dastrup's book, as the first of the TRADOC branch histories, sets a high standard for other branch histories. Once again, *FA leads the way!*

CPT Leslie H. Belknap, FA  
J5, Strategy Division, Joint Staff  
Washington, D.C.

## Paladin—Army's New Top Gun

On 24 April 1992, the first Paladin M109A6 howitzer rolled off BMY's production line, making it the Army's newest "Top Gun." The new howitzer significantly increases the Army's fire support capabilities. The Paladin can receive fire missions on the move. With no external assistance, it can select and take up firing positions, automatically unlock and orient its cannon, and fire and move before it's exposed to counterfire. Unlike its predecessors, it has night vision and chemical protection capabilities and secure voice and digital communications. The crew never leaves the vehicle to lay the gun.

From the time the Paladin gets a fire mission, it can occupy a position, compute firing data and fire the first round in less than 60 seconds. Its predecessors take 11 minutes. The Paladin's range increases the M109 series of howitzers from 18 to 24 kilometers, the latter for rocket-assisted projectiles, to ranges of 23.5 to 30 kilometers. Its hull, turret, suspension and automotive system upgrades extend the time between failures by two-thirds and cut in half the time between repairs. Although the Paladin weighs 8,300 pounds more than earlier M109s, its fuel capacity, speed and driving range remain the same.



Looking Over the New Paladin. At the BMY plant in York, Pennsylvania, visitors look over the Army's new Top Gun. BMY will produce 164 Paladins during the next three years with the Army expected to buy an additional 660 systems. *US Army Photo by Bill Harris*

# Nuke... "End of Mission, Out"

by Major Michael L. Kirk

At 0831 hours Pacific Daylight Time on 25 May 1953, the United States Army Field Artillery fired the world's first atomic artillery projectile. Nineteen seconds later, the 280-mm projectile detonated 500 feet above Frenchman Flats in Nevada. The resulting explosion was the equivalent of 15,000 tons of TNT. With this explosion, the US Army proved its ability to employ surface-fired nuclear weapons in support of maneuver forces on a modern battlefield.

Three generations of Field Artillerymen continued this mission until it ended in September of 1991.

During this 39-year period, a succession of special weapons entered the Army's inventory, ranging from atomic demolition mines emplaced by the Engineers and Special Forces to the Nike Hercules missile fired by the Air Defense Artillery. In the 1960s, the Infantry had a weapon called the Davy Crockett that fired a sub-kiloton (sub-KT) warhead.

But the Field Artillery received the preponderance of nuclear weapons, both artillery-fired atomic projectiles and missile systems. These included the 280-mm, 8-inch and 155-mm projectiles and the Corporal, Little John, Lacrosse, Honest John, Sergeant, Pershing and Lance missiles. Two more missile systems, the Redstone and Jupiter, were initially developed by the Army and later moved into the space program.

The Field Artillery School, Fort Sill, Oklahoma, began training soldiers on nuclear weapons in 1952 when the Mark 9 280-mm projectile entered the inventory. The Mark 9 was the first artillery-fired projectile and was the round fired by "Atomic Annie" at Frenchman's Flats in 1953. In 1956, the W19 warhead replaced the Mark 9 warhead, increasing the yield delivered by the 280-mm projectile. From 1952 to 1991, three more artillery-fired, nuclear projectiles and five missile systems entered the Field Artillery's inventory, and thousands of artillerymen received training on nuclear systems at Fort Sill.

The Corporal was the first missile system to enter the Army's inventory in 1953. It was a single-stage, liquid propellant missile capable of delivering the 10- to 60-KT W7 warhead to a range of

60 miles. This missile remained in the stockpile until 1967.

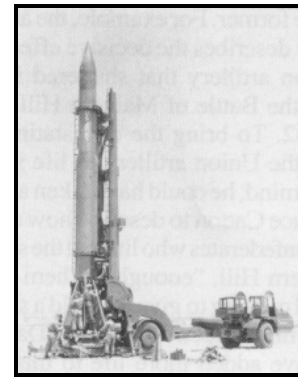
In 1954, the Honest John missile entered the inventory. It delivered a 10- to 60-KT warhead and also had a conventional capability. The Honest John was transported on a modified 5-ton truck or special trailer launcher and was armed with the same W7 warhead as the Corporal. In 1958, the more efficient W31 warhead replaced the W7 and remained in service until the Honest John was replaced by the Lance missile system in 1974.

The next special weapon to come into the Army's inventory was the M442 8-inch artillery projectile. It was a major advance in technology because its W33 warhead was packaged for easier handling and transport. This warhead delivered a 10-KT burst at ranges up to 18 kilometers.

Many present day Field Artillerymen can remember long hours spent in the back of M109 vans or in bunkers at lonely warhead detachments performing technical operations on nuclear rounds, including the M442, during Army training and evaluation programs (ARTEPs) or nuclear surety inspections (NSIs). The M442 projectile was still in use when the Army received "End of Mission."

The Sergeant was the next missile to enter Army service in 1962. It was a solid propellant missile and could deliver a W52 warhead up to 75 miles. The Sergeant was retired from service in 1977.

In 1963, the M454 155-mm nuclear projectile entered the Army's inventory and increased the number of nuclear-capable delivery units. This projectile, armed with its W48 warhead, provided a sub-KT capability to a range of approximately



Corporal Missile

16 kilometers. The M454 could be fired by the M114, M109 series and M198 howitzers. It also remained in the Army's inventory until End of Mission.

The Pershing I entered service in 1963 and was armed with a W50 warhead. This system was the forerunner of two more versions of the Pershing system, the P1a and the P1b. In 1983, the Pershing II, armed with the W85 warhead, entered service and gave the Army a long-range strike capability. With launchers based in Germany, the Pershing II could strike deep into the Soviet Union. It was one of the Soviets' primary systems for elimination in the Intermediate-Range Nuclear Forces (INF) Treaty and is credited as one of the systems that aided immensely in ending the Cold War.

The next system to enter the Army's inventory was the Lance missile system. Lance was a liquid propellant, guided missile capable of delivering its W70 warhead at ranges exceeding 100 kilometers. The Lance replaced the Honest John and gave corps commanders the ability to deliver up to a 100-KT weapon deep into the enemy's rear area. Lance also had an enhanced radiation capability and, like Honest John, could fire a conventional warhead.

In 1981, the 8-inch M753 projectile was brought into the Army's inventory. The M753 was armed with the W79 warhead and also had an enhanced radiation capability. The W79 warhead had selectable yields up to 10 KT's.

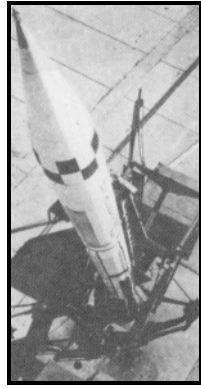
Training on all these systems was the responsibility of the Nuclear Weapons Employment Division (NWED) of the Field Artillery School. NWED originally began operations in the basement of Searby Hall. In 1962, it moved into the restricted area of Snow Hall. The





B/1-42 FA

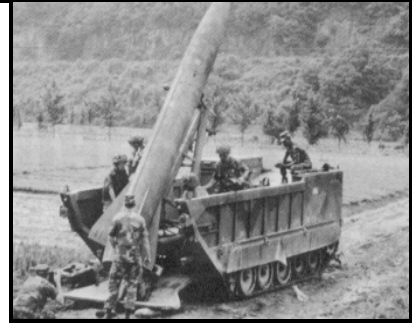
M31 Rocket-Honest John



Sergeant



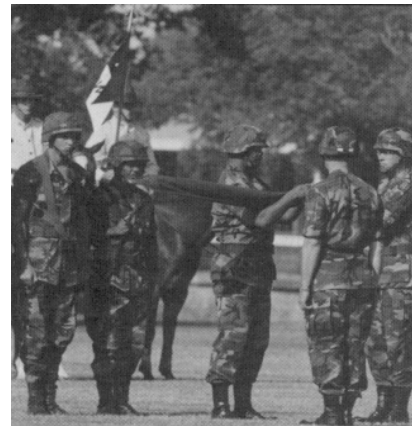
Pershing I



Lance Missile



Pershing II



Kevin Tucker

Eight FA groups cased their colors on 7 July in a ceremony at Fort Sill: all three groups of the Southern European Task Force and the five in the 59th Ordnance Brigade.



Major Michael L. Kirk is a Instructor-Writer in the Warfighter Division of the Fire Support and Combined Arms Operations Department (FSCAOD) in the Field Artillery School, Fort Sill, Oklahoma. He was the last Chief of the Nuclear Weapons Employment Branch, FSCAOD, prior to its ceasing operations in September 1991. He also has served as S3 of a recruiting battalion in Louisville, Kentucky, and commanded B Battery, 1st Battalion, 333d Field Artillery (Lance) in Wiesbaden, Germany. Major Kirk is a graduate of the Nuclear and Chemical Targeting and Nuclear Weapons Officer Courses at Fort Sill and of Ohio State University in Columbus.

"cage" quickly became the focal point of all nuclear-related training at the Field Artillery School. Field Artillerymen passed through the cage learning the proper procedures for assembling, firing and employing all the artillery-fired projectiles.

NWED also provided special weapons training on all missile systems from the Corporal to the Pershing and Lance. Many officers and NCOs attended the Nuclear Weapons Detachment Course. This course prepared them for service with a custodial detachment, or "det," responsible for maintaining and providing special weapons to both American and NATO delivery units. At all times, US personnel were required to maintain positive control and custody of special weapons in their units. In its almost 40-year history, NWED prepared more than 63,500 students to assemble and prepare special weapons for firing.

In addition to those students who received military occupational specialty (MOS)-specific training, NWED instructors also provided information and instruction to thousands of pre-command course (PCC), officer basic course (OBC) and officer advanced course (OAC) students on battery nuclear operations, courier officer duties, special weapons officer duties and the management of a personal reliability program (PRP).

Most artillerymen "sweated out" a NSI by a corps, United States Army Forces Command (FORSCOM), US Army Europe (USAREUR) or even the Defense Nuclear Agency inspection team. At least once a year, every nuclear-capable unit received a NSI or, in the train-up for an inspection, a technical validation inspection (TVI). Redlegs in special weapons detachments and Lance or Pershing units received more than one inspection per year. Many

a battery or battalion commander stood on the sideline and watched as his unit went through these critical inspections, knowing his nuclear certification was on the line.

Literally thousands of NSIs were administered to these nuclear-capable units and most passed them successfully. The inspections took place in all types of weather and under a myriad of conditions in Korea, Germany, Italy, Greece, Turkey and, of course, in the continental US (CONUS).

On 27 September 1991, President George Bush announced the United States would retire and destroy its stockpile of surface-to-surface, non-strategic nuclear weapons. This announcement ended the Army's nuclear delivery mission. All units of the Active Army and the Reserve Components began winding down their nuclear mission and turning in their equipment.

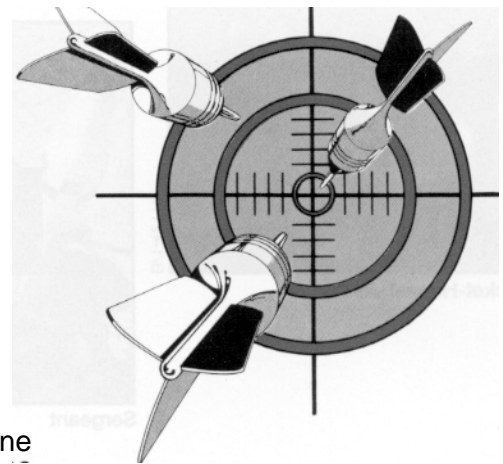
The Field Artillery School was part of this closeout and has terminated all nuclear-related courses, except for the Nuclear and Chemical Target Analyst Course. This course remains active to train nuclear planners and analysts at the corps level and above.

Now, on a sunny day at Fort Sill, visitors can walk to the corner of Randolph and Geronimo Roads and see "Atomic Annie" at the Field Artillery Museum. They can also visit Rocket Park across from the Old Post Corral and see the Corporal, Sergeant, Lance and Pershing missiles. Up close, they can see the succession of systems that helped end the Cold War and ensure peace in Europe for almost 40 years.

To three generations of Field Artillerymen—*Job well done. End of mission. Close Station, March Order.*

# The Field Artillery FY 91 Accident Report

by Major Kenneth R. Wood



For the fourth straight year, Branch accidents continue to decline at an average annual rate of 17 percent. This translates into a reduction of 431 accidents since FY 88. It also indicates the positive influence soldiers and leaders are having on preserving combat power through accident prevention. But no matter how much we may want to pat ourselves on the back or regress into a purely defensive posture, we cannot. Preventable accidents continue to rob the Branch of precious resources.

Although the reported accident experience for FY 91 was 25 percent lower than in FY 90 (from 650 accidents for FY 90 to 485 for FY 91), the price paid in soldiers, machines and money for those accidents remains too high. Figure 1 outlines this cost in terms of lost warfighting capability. For every 14 days in FY 91, one soldier was killed and 19 injured; one combat vehicle and two Army motor vehicles had damages costing more than \$2,000; and 278 training man-days were lost—all at an unbudgeted cost of \$471,000.

This is not to suggest current efforts are not succeeding; statistics prove otherwise. What this does indicate is that maximum effect has yet to be achieved toward preservation of combat strength through accident prevention.

Achieving maximum effectiveness of prevention efforts requires the constant application of a process closely resembling that used to achieve maximum effects on target with our weapon systems. The only difference is that in accident prevention we may not have the opportunity to "repeat on target" before a life is lost, thus making the application of the correct prevention "munitions" critical.

This article uses the three major steps of the targeting process—target acquisition,

target analysis and target engagement—to show what can be done to achieve maximum target effects.

## Target Acquisition

As seen in Figure 1, Branch accidents took the lives of 26 soldiers, injured 461 more and damaged enough equipment to render an entire firing battalion combat ineffective. Recovering the loss cost the Branch \$12.3 million in unprogrammed dollars. This is up \$2.3 million from FY

90 and does not include the Doha, Kuwait fire, which alone injured 58 people, destroyed 30 tracked and 54 wheeled vehicles, damaged 30 other tracked and 47 wheeled vehicles and cost the Branch more than \$40 million. But, like the remainder of Operations Desert Shield and Storm accidents (Figure 2), the Doha fire was caused by the same factors as accidents occurring outside the theater. Analysis of Desert Shield and Storm accidents revealed that we took to war those same errors that caused accidents in peacetime.

A closer look at the total accident picture revealed that all Branch accidents fell within five major accident categories or "targets." They are privately owned vehicles (POVs), personal injury, Army motor vehicles (AMVs), Army combat vehicles (ACVs) and explosion or fire. Figure 3 shows their respective contribution to the total accident number. Caution must be exercised in drawing conclusions

Category	3-Year Average	FY 90	FY 91
Soldiers Killed	31	27	26
Soldiers Injured	641	615	461
Training Man-Days Lost	7,438	6,314	7,259*
ACVs Damaged	36	31	27
AMVs Damaged	92	95*	57
Cost in Millions	\$13.2	\$10.7	\$12.3*
			\$53.2**

\* Is an increase over the previous year.  
 \*\* Doha, Kuwait Fire

Figure 1: A Historical Comparison of FA Losses in Warfighting Capability Due to Accidents.

from these figures. "Target analysis" reveals an interesting picture.

## Target Analysis

Taking the largest contributor first, personal injury accidents are defined as those accidents that involve injury to Army personnel as a result of Army operations that are not covered by the other four listed categories (AR 385-40, Paragraph 2-8h). This includes various subcategories of accidents ranging from by standing to weapons handling. Though this category contributed 68 percent of the total accidents, these accidents were, for the most part, relatively minor.

The predominant cause of personal injuries, to include two on-duty and two off-duty fatalities, was a general failure to follow established, well-known procedures. Many of these accidents occurred in the presence of NCOs or officers. From the simple, self-inflicted wound by a bayonet to the complex set of factors causing the Doha incident (categorized under explosion or fire), had simple procedures been followed and enforced, these accidents

would not have happened. And the results of Doha would not have become such a painful, costly reality.

ACV and explosion or fire accident cause factors follow with personal injuries. Simple causes such as failure to follow procedures, failure to enforce standards, attempting to perform actions for which untrained, inattention to actions being performed, haste and slips, trips and falls account for the majority of these accidents. POV and AMV accidents present, however, a more compelling problem.

Totalling only 24 percent of the accident picture, POV and AMV accidents accounted for 85 percent of the fatalities (70 percent POV and 15 percent AMV). These two categories were lumped together because the actions required to perform operational requirements and accident cause factors are virtually the same. But to gain a full appreciation for this similarity, each must be analyzed separately, beginning with AMV accidents.

Of the 57 AMV accidents reported, 25 had enough detail for in-depth analysis

(see Figure 4). *Excessive speed* was the leading accident cause accounting for 52 percent of these accidents. Inattention, failure to yield and following too closely contributed 16 percent each. Noteworthy were the findings depicted by the right-hand column, "Assistant Driver/NCO." As shown in the right-hand bottom "Total," out of the 25 accidents analyzed, 12 had an assistant driver on board. Eight of those 12 were NCOs, E-5 through E-8. Had these eight NCOs enforced the standard, the chances are great that at least eight of these accidents could have been prevented and two lives saved. Similarly, if the remaining four assistant drivers had taken the responsibility more seriously,

Category	Number	Percent of Accidents	Cost (Millions)
Total Accidents	128	26%	\$45.0*
Fatalities	4	15%	N/A
Personal Injuries	89	27%	\$1.1
AMVs	22	38%	\$1.5
ACVs	11	40%	\$1.3
Explosion or Fire	5	55%	\$41.1

\* Includes the Doha Accident

Figure 2: FA Branch Accident Summary for Operation Shield and Storm. The Totals are based on reported accidents.

Category	FY 88	FY 89	FY 90	FY 91
POV	112 (12%)	101 (13%)	60 (9%)	60 (12%)
Personal Injury	655 (68%)	498 (65%)	452 (69%)	332 (68%)
AMV	119 (12%)	94 (12%)	95 (14%)	57 (12%)
ACV	45 (5%)	50 (6%)	31 (5%)	27 (6%)
Explosion or Fire	19 (2%)	17 (2%)	7 (1%)	9 (2%)
<b>Total</b>	<b>950 (99%)</b>	<b>760 (98%)</b>	<b>645 (98%)</b>	<b>485 (100%)</b>

Figure 3: A Historical Comparison of FA Branch Accidents by Category. All Branch accidents fell into these five categories in FY 91. The percentages indicate the category's contribution to the accident totals.

Vehicle Type	Total Accidents Analyzed	Assistant Driver/NCO
<b>Excessive Speed (52%)</b>		
HEMTT	6	4/2
HMMWV	6	2/1
CUCV	1	1/1
<b>Subtotal</b>	<b>13</b>	<b>7/4</b>
<b>Inattention (16%)</b>		
HEMTT	1	0/0
HMMWV	3	3/3
<b>Subtotal</b>	<b>4</b>	<b>3/3</b>
<b>Failed to Yield (16%)</b>		
CUCV	2	0/0
HMMWV	1	1/0
2 1/2-Ton Truck	1	0/0
<b>Subtotal</b>	<b>4</b>	<b>1/0</b>
<b>Following Too Closely (16%)</b>		
HEMTT	2	0/0
5-Ton Truck	2	1/1
<b>Subtotal</b>	<b>4</b>	<b>1/1</b>
<b>Total</b>	<b>25</b>	<b>12/8</b>
<b>Legend</b>		
<b>HEMTT</b> = Heavy Expanded-Mobility Tactical Truck		
<b>HMMWV</b> = High-Mobility Multipurpose Wheeled Vehicle		
<b>CUCV</b> = Civilian Utility Cargo Vehicle		

Figure 4: AMV Accidents. Of the 57 AMV accidents reported in FY 91, 25 had enough detail for in-depth analysis. Excessive speed accounted for 52 percent of the accidents. As shown in the right-hand column of the "Total" line ("12/8"), 12 of the 25 accidents had an assistant driver on board. Of those 12 assistant drivers, eight were NCOs, E-5 through E-8. Conclusion: leaders aren't enforcing the standards.

four more accidents could have been prevented. Together, this would have reduced the accident rate by 48 percent. Let's look at POV accidents.

There were six major failure categories for POV accidents (Figure 5). Three of these were the same as those identified in AMV accidents (excessive speed, failure to yield and inattention), constituting the commonality of accident causes between the two categories.

Driver Errors	AMV	POV
Excessive Speed	19	26
Alcohol Influence		16
Failure to Yield	9	4
Lack of Sleep/Fatigue		3
Inattention	4	11
<b>Total Accidents Analyzed</b>	<b>32</b>	<b>60</b>

Figure 5: FA Branch Critical Problem Areas in Accident Causes. This figure analyzes 32 AMV accidents (56 percent of the accidents in that category) and 60 POV accidents (100 percent of the POV accidents). Of the POV accidents, alcohol was the sole cause of 26 percent of them. In both the AMV and POV categories, drivers ages 18 to 24 and accidents between 0200 and 0600 were consistently reported as accident circumstances.

Just as these common causes demonstrated a failure to follow procedures and standards in AMV accidents, they also show a habit transference to operating a POV. This clearly shows that what is not enforced on duty will translate to a conscious justification for not following the standard off duty.

The result, therefore, is obvious. Only, in this case, the outcome was far more severe. Of the 60 POV accidents reported, the three driver errors common to both POV and AMV accidents accounted for 41 of the accidents. Seven resulted in deaths. Contributing to, and in many cases exacerbating, the effects of these failures was the injection of alcohol or fatigue into an already potentially dangerous situation.

Alcohol was the sole cause factor in 26 percent of the POV accidents. Its contribution to AMV or the rest of the POV accidents could not be determined, but it was not ruled out. Studies by the

Department of Transportation show that a blood alcohol count (BAC) of just .10 percent (the legal limit in most states) increases the risk of an accident by six to 12 times, especially for the 18- to 24-year-old age group. This is the same age group involved in more than 80 percent of AMV and POV accidents. Fatigue, on the other hand, presents a much more subtle, yet just as dangerous, accident cause factor.

Though only three POV accidents were reported where fatigue was the primary cause, its contribution, like alcohol, can not be ruled insignificant. In many of the AMV and POV accidents, time on duty exceeded 18 hours. *FM 22-9 Soldier Performance in Continuous Operations* shows that when subjected to sleep loss, the soldier's circadian rhythm, or day-night/work-rest cycle, is affected proportionally. The first area affected is the soldier's mental acuteness. This is accompanied by a profound biological urge to sleep between 0200 to 0600 hours, commonly called the circadian lull. Contrary to assumptions regarding age, young soldiers (18 to 24) demonstrate poorer continual mental efficiency than middleaged soldiers (average age of 40 years). Why? Older people tend to pace themselves better than younger ones. So, what does all this mean? The numbers 18 to 24 and 0200 to 0600 consistently are reported accident circumstances.

One other contributing factor, not to accidents but to deaths, was the use of seat belts in ACVs, POVs and AMVs. One ACV and nine POV deaths were the result of not using seat belts. Information provided for AMV accidents was not conclusive enough to positively determine whether the failure to use seat belts was a factor, but the preponderance of evidence suggested it was.

In the ACV category, a soldier died because he was not wearing his seat belt. He was occupying the assistant driver position (passenger side) in an M548 ammunition carrier during a convoy. He had fallen asleep and was leaning against the passenger-side door. The M548 hit an obstacle in the road, causing the vehicle to jolt violently. The passenger-side door flew open, and the assistant driver fell out of the vehicle and under the curbside track.

The following description of an accident proves the lifesaving capability of seat belts in POVs. The soldier lost control of his vehicle because he was driving too fast for the weather conditions. The vehicle

slid off the road and over a 100-foot cliff. The car landed, nose first, forcing the engine into the front seat of the car. Assistance was summoned shortly after the accident—by the driver himself. Although the vehicle was a total loss, the driver unbuckled his seat belt and walked away with minor injuries.

Seat belts do save lives, but only if used. Active measures to save lives must join forces with this passive measure if we are to truly prevent accidents. How do we do that? The answer lies in proper "target engagement" with the right preventive "munitions."

## Target Engagement

Achieving maximum effectiveness on the targets identified requires a two-pronged attack. First, we must engage these targets with short-term efforts to continue the overall downward trend in accident occurrence. The long-range effort requires a more dynamic approach that will prevent accidents from occurring by attacking the root causes—human factors.

**Short-Term Efforts.** We must engage the targets with immediate suppressive fires with habitual efforts (HE) as the ammunition of choice. Habitual efforts are continual command emphasis on training to meet standards and then enforcing them so adherence to standards is second nature.

As we have seen, the common thread running through all targets was a failure to follow established procedures and standards. When soldiers know the standards and leaders enforce them, the probability of accidents occurring is reduced, and in turn, the severity of the accidents that do occur is reduced.

Supporting this short-term effort are reporting accidents and applying lessons learned. First, leaders must demand timely and accurate reports of accidents via the DA Form 285. This will give all levels of the chain of command an opportunity to "see" the accident and enhance on-call target suppression.

Second, leaders and soldiers must continually apply lessons learned, not only from personal mistakes, but also from the mistakes of others. The best lessons learned, especially regarding accident prevention, are those learned from others. As academic as these may seem, their effects are immediately realized. Long-range efforts, on the other hand, are less



academic and require a much different approach.

**Long-Range Efforts.** Refer back to Figure 3. This time, pay close attention to the percentages as compared to the totals. Although the number of accidents is coming down, the percentage contribution of the categories remains virtually the same. Long-term accident prevention must reduce these percentages.

To do this, a change of attitude toward safety is necessary. Instead of viewing safety as merely an academic add-on to existing procedures or a mission inhibitor, Redlegs need to view safety as a mission enhancer. This means accident prevention becomes an inherent part of mission planning and is fully integrated into the entire planning and operational process. In other words, we must apply improved command management (ICM) instead of just HE to affect true accident prevention.

The risk assessment/management process is a way of accomplishing this. The November-December 1991 issue of *Countermeasure* explains this process in detail.

As the branch continues to downsize, it will become more and more important that we sustain a high level of combat readiness to meet a future threat. This will mean conducting training that poses a higher level of risk. Risk assessment/management will enhance our ability to conduct this vital training safely, training that heretofore was deemed too risky.

The bottom line is we must train as we will fight, but to be effective, we must get to the fight with all our resources. Proper target engagement of this silent enemy will give us that edge necessary for success. *Fire for Effect.*

**Major Kenneth R. Wood has been the Field Artillery Systems Manager at the US Army Safety Center, Fort Rucker, Alabama, since 1990. His previous assignment was as an Accident Investigator for two years at the Army Safety Center. Major Wood's experience with units includes serving as the Battalion S3 for 1st Battalion, 9th Field Artillery (Pershing), 56th Field Artillery Command in Germany; Battery Commander in the same battalion; and Battery Commander in the 2d Cannon Training Battalion, Fort Sill, Oklahoma. He holds a Master of Public Administration from Jacksonville State University in Alabama and completed the At-Scene Investigator Course at the Northwestern Traffic Institute, Evanston, Illinois.**

## A Little German Town



*As I sit here in silence with no one else around, My thoughts go back to Europe and a little German town. This town was our objective to take and hold that day; Sounds easy as I say it, but it didn't work that way.*

*The time was shortly after noon, the sun was shining bright; We had moved for several miles without a foe to fight. Our tank was one of seven assigned for this attack, With infantry mounted up and crouched upon the back.*

*The column stopped and there it was, one thousand yards away, The town a perfect ambush—no cover all the way. "Tank Commanders Forward," a radio voice now said. I glanced across at Donald T., he merely shook his head.*

*Halfway there, all Hell broke loose—shells bursting everywhere. We finally took the edge of town, but death was in the air. Our own artillery opened up, we pushed the enemy back; Then ambulances full of wounded were hit by counterattack.*

*Retreat was made impossible by that field of open ground. Our position there was desperate—we had to hold that town. "Fire Mission, Fire Mission," Olmstead's voice would say; A pause then radio's answer, "Battalion's on the way."*

*We held them there till 4 p.m., then came shouts of glee; Reinforcements coming up—a beautiful sight to see. Resistance stopped, the town secured, the cost was awful high As billowing smoke from knocked-out tanks drifted to the sky.*

*As I sit here in silence, with Christmas drawing near, I gaze upon an open field; the day is bright and clear, I visualize a German town rebuilt to look the same. Odd thing about that little town, I can't recall its name.*

John J. McMahon  
1922 - 1992  
Redleg, World War II