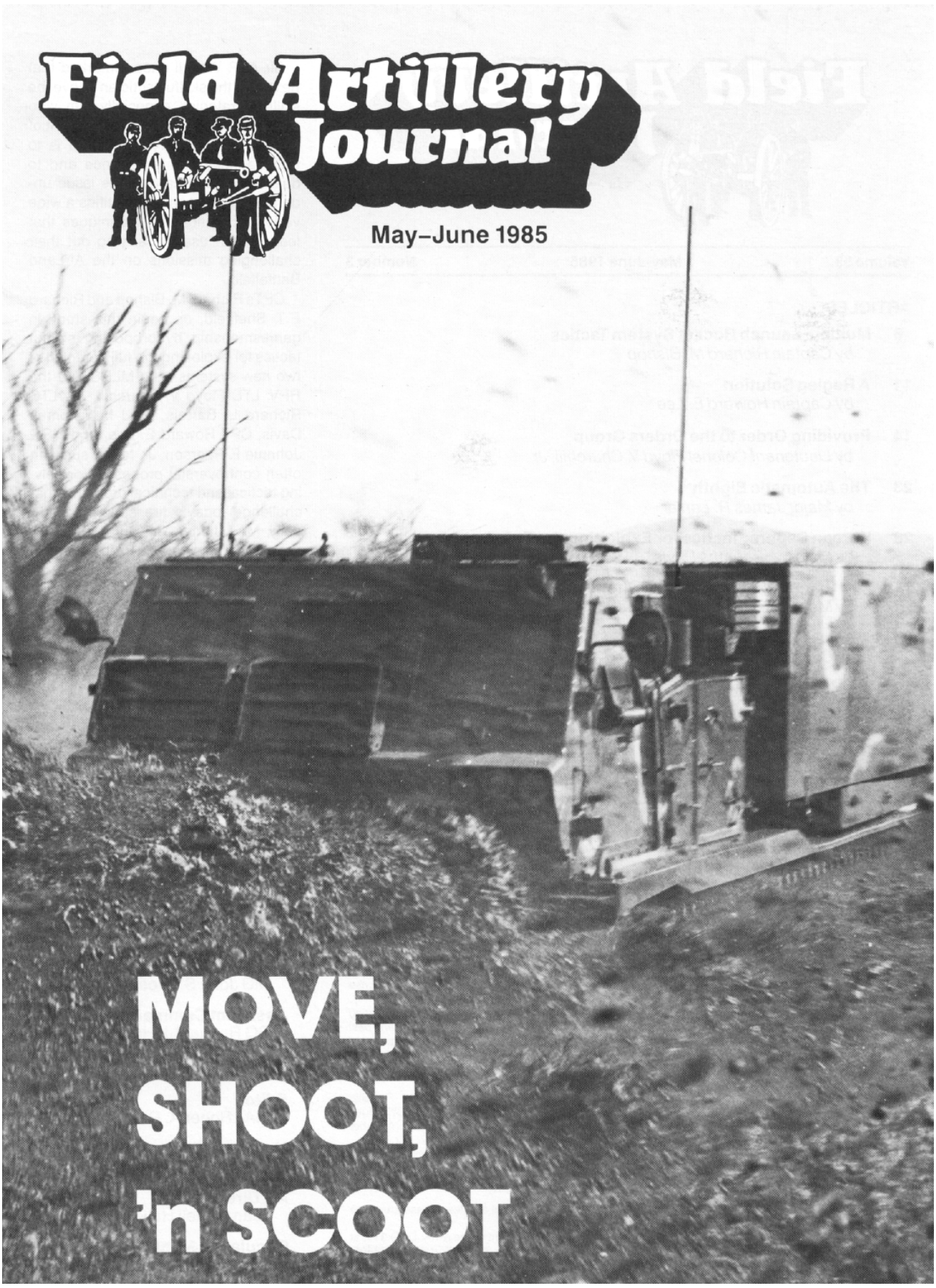
Field Artillery Journal

May–June 1985



MOVE, SHOOT, 'n SCOOT

Field Artillery Journal

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ARTICLES

FEATURES

Front cover photo by Sam Orr

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

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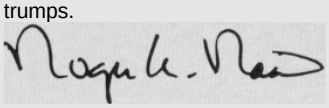
Sir A. P. Wavell once remarked that he rated "the skillful tactician above the skillful strategist, especially him who plays the bad cards well." The intent of today's field artillery leadership is to train tacticians of excellence and to deal them good cards. This issue underscores that goal. It identifies a wide variety of tactics and techniques that leaders can use in carrying out their challenging missions on the AirLand Battlefield.

CPTs Richard M. Bishop and Richard E.T. Sheffield, Jr. begin this study in gamesmanship by proposing skillful tactics for exploiting the full potential of two new systems—the MLRS and the RPV. LTC Floyd V. Churchill, Jr., LTC Richard L. Bartels, MAJ M. Thomas Davis, CPT Howard E. Lee, and MSG Johnnie F. Pearson, Jr. follow suit with often controversial proposals for solving tactical and technical problems that challenge today's fire supporters. Finally, MAJ James R. Lanier and CPT John C. Whatley remind us that the field artillery has a proud legacy of tactical excellence—a legacy today's Redlegs are obligated to perpetuate.

This issue of your *Journal* deals some interesting cards, but artillerymen should be evermindful of GEN George S. Patton's observation that, "There is no approved solution to any tactical situation." Skillful Redleg tacticians and technicians play their cards—good or bad—with finesse, and they never forget that the combined arms team holds the trumps.



EDITOR

On the Move

MG JOHN S. CROSBY

It is with mixed emotions that I surrender the title of Mr. Field Artillery. The months have gone by quickly and the opportunity to serve at the Field Artillery School and Fort Sill has been the culmination of my 31 years of service. But, there comes a time when each of us must move on to other challenges, and that time has come for me.

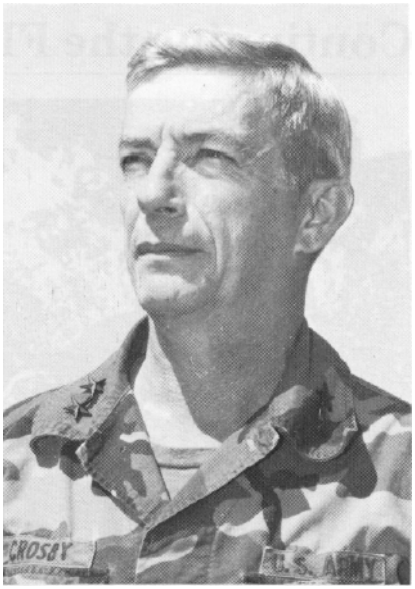
To all field artillerymen everywhere, I thank you for your support and help over the past several years. Together we have put the Field Artillery on the right azimuth for transition to the 21st century. That azimuth is and continues to be to support the maneuver arms. We have no other mission. Today, the remotely piloted vehicle is a reality at Fort Hood. The back-up computer system will be fielded to the entire Army this year. We are developing the multiple launch rocket system (MLRS) to be all that it can be. Both the Advanced Field Artillery Tactical Data System and lightweight tactical fire direction system (TACFIRE) should replace TACFIRE in the near future.

Doctrinally we have wrung out the fire support system at brigade and below with the Fire Support Team Force Development Testing and Experimentation II (FIST FDTE II) at Fort Riley and Close Support Study Group III. The challenge now is to win the Army's support for CSSG III's recommendations and then implement them. At the other end of the fire support system we are reestablishing the Corps Artillery headquarters and headquarters battery (HHB). The HHB and the battlefield coordination element are essential for the corps commander to be able to execute AirLand Battle doctrine.

Our objectives in training in the Field Artillery School have been three-fold: ensuring our students achieve excellence in their courses; providing the field technically and tactically competent advanced noncommissioned officer course graduates and fire support officers (officer basic and advanced course graduates); and improving the training value of the National Training Center (NTC) for field artillerymen. We are meeting those objectives. For the future, we need good people as instructors and trainers, a continued search for better ways to train, and continued follow-through and execution.

Proponency has grown exponentially in the past few years, and I have pushed my role as proponent for the Field Artillery into all areas. It provides great benefits to the Army and to each branch. Day in and day out, the Field Artillery Proponency Office is doing great work for all soldiers in our branch.

Finally, I remain convinced, as I have said in other forums, that for increased, total effectiveness the Army needs to push the Field Artillery in three major directions:



- Grow MLRS into all that it can be.
- Develop smart munitions.
- Improve the Field Artillery automated command and control system by a block approach.

I leave saluting the great work and untiring dedication of all here at Fort Sill and in the Field Artillery units worldwide. The future belongs to the Field Artillery!

Incoming

LETTERS TO THE EDITOR

Continuing the FIST Controversy

Stick to the Basics

I have read numerous articles published in the *Field Artillery Journal* referring to "high-speed devices" and gimmicks enabling the forward observer to perform his mission more effectively. My question is, have we forgotten how to spell training; isn't that the bottom line?

The tasks that any soldier will be able to perform in any situation, combat or otherwise, are those he or she has been *repetitiously* trained to do. To count on our forward observers to do more than they have been trained to do would be ridiculous. Or, should we assume the new high-tech devices and their gimmicky counterparts will eliminate a need to train forward observers? I am skeptical, to say the least.

Why don't we train our observers now on combat proven methods? Granted, the threat faced by forward observers on the modern battlefield will require a greater understanding of fire support systems and their employment. But will new equipment take the place of training in this situation?

Good gun crews are still being developed by what is lovingly referred to as the "Cannoneers hop." I submit to you that the very best forward observers are trained using similar techniques. So at least until these high-tech devices become "Murphy proof," don't sacrifice training for technology; I know good leaders will not.

Once an instantaneous ability (call it instinct if you will) is imparted to the observer to perform his basic missions, that observer's confidence will grow. An observer with confidence in himself and his equipment will be able to perform satisfactorily in complex situations, much more so than an observer who has all this new equipment but has not been trained to use it.

James J. McDonough
SFC, USA
Fort Benning, GA

Nailing the FIST Chief

Captain Jeffrey A. Jacobs' letter entitled "How to Succeed as a FIST Chief" (January-February 1985 *Field Artillery Journal*) hits very close to home for the Field Artillery Community. The very existence of every artilleryman is based on support of the ground gaining arms. Captain Jacobs' letter is based on an infantry unit, but the idea pertains to any maneuver unit, whether it is infantry, armor, or cavalry.

The battery commander working through the brigade and battalion fire support officers should push his fire support team (FIST) chiefs to establish a good working relationship with their company commander. These same fire support officers are responsible for the training of the FIST chiefs in fire support planning and coordination, developing skills that were not taught in-depth during the Field Artillery Officer Basic Course.

As Captain Jacobs stated, the FIST chief will have mortars as well as the other fire support assets. He must be knowledgeable in all aspects of mortar utilization to include computation of firing data because he might have to train mortar fire direction centers. This will also help the lieutenant develop and maintain his gunnery skills.

Based on the importance of fire support coordination, we should be placing our most knowledgeable and experienced officers as FIST chiefs. It should be the next step after fire direction officer or executive officer—not a testing ground for new lieutenants.

In short, the Field Artillery Community must better prepare and continue to train the fire support coordinator—the FIST chief—at the company level. He must have as much experience as we can possibly give him, to include fire support capabilities and limitations, maneuver capabilities and limitations, fire support planning, and fire support coordination. Finally, he and the company commander must work as a team to bring to bear as much firepower as possible against the enemy.

Jerry Lawrence
CPT, FA
Fort Sill, OK

FIST Factors

Major John T. Hutchinson's letter (January-February 1985 *Field Artillery Journal*) entitled "Who is supposed to train what?" describes exactly what the Field Artillery School should do in training lieutenants. I agree that the School cannot do everything, and frankly I was generally satisfied with the training received by the 40 or so lieutenants I saw as a battalion commander. I take exception, however, to his view that fire support team (FIST) chiefs must have had battery experience. There are several shortcomings with his argument.

• First, there are not enough firing battery lieutenant positions (6) in a direct support battalion to match the number of FIST chiefs (12). It is in the firing battery that lieutenants gain the technical competence Major Hutchinson desires. Battalions organized 3 by 8 can match the number, but that is not the case in most divisions today.

• Second, firing batteries need experienced lieutenants also. The demands upon battery executive officers and fire direction officers (FDO) are just as rigorous, although different, than those of FIST chiefs. In fact, firing battery lieutenants who are *not* well-trained and experienced lead to units that "shoot out"—something we cannot tolerate in combat or in training. Battalion commanders weigh these requirements very carefully when selecting lieutenants for various jobs.

• Third, the key to FIST proficiency depends on the abilities and experience of the brigade and battalion FSO as well as on the priorities established by the battalion commander. The brigade FSO should be a major, even if it means the S3 is a captain. The battalion FSOs must be captains who have graduated from the advanced course and preferably who have commanded batteries. The battalion commander has to make FIST proficiency top priority and turn loose the senior leaders to produce the desired results.

Can it work this way? During my command, we enjoyed two very successful rotations to the National Training Center and a successful REFORGER using the philosophy described above. It's not experienced lieutenants that make the difference, it's how they are trained and led.

R. S. Ballagh, Jr.
LTC, FA
Fort Polk, LA

New Thoughts on Survivability

Response to "A Small Price for Survival"

I found Major Thomas E. Hill's article, "A Small Price for Survival" (January-February 1985 *Field Artillery Journal*) very enlightening and informative. I agree with Major Hill that the inconveniences of remoting the communications is a small price to pay for survival. Had we used this "remote" system in the 2d Infantry Division Artillery, we might have had better luck in communicating over and around the mountainous terrain we encountered in Korea. The article, however, left me with three unanswered questions. . . . As an artilleryman, I appreciate a signal officer taking the time to enlighten us. Well done!

William O. Bryant
MAJ, FA
Instructor, ATB,
TCAD
Fort Sill, OK

I put Major Bryant's questions to Major Hill. Here is what he said—Ed.

Question: *Where did the extra radios come from*?

Answer: There were no extra radios used. The radios for the remote van were those that were assigned for those nets by tables of organization and equipment and doctrine. We simply took them from the vehicles in which they were normally used in the tactical operations center (TOC) and placed them in another configuration in the remote truck. The artillery brigade liaison radio came from the liaison officer's vehicle. The division artillery command fire net 1, division artillery command fire net 2, division command net, and division operations and intelligence net radios came out of their respective vehicles.

The division artillery intelligence radio came from the target acquisition battery and was the radio assigned from that battery to handle that net in the TOC.

The radios for the jump TOC came from the S3's vehicle.

Question: *Who provided the additional security for the jump TOC*?

Answer: The jump TOC consisted of a commercial utility cargo vehicle (CUCV) and the 2½-ton plans van. A three-person crew from the S3 shop as well as the S3, fire direction officer (FDO), and the assistant operations NCO went forward with the jump TOC. The operations NCO operated the radios while the S3 and FDO worked in the plans van. The CUCV was pulled up tailgate-to-tailgate with the van, and the crews passed information face-to-face. This may not have been very "high-tech," but it was effective for this short (3 to 4 hours) operation. The jump TOC went forward with the headquarters and headquarters battery (HHB) advance party, and because it was so small, no more than two people (provided by the advance party) were necessary to secure the area. I always went forward with the jump TOC to position it in the site that the HHB commander and I had previously selected.

Question: *How does the TOC interface with the tactical fire direction system (TACFIRE)? Can they "talk" digitally*?

Answer: Establishing the interface with TACFIRE may be difficult, requiring a "talk down" phase on the radio nets before they switch over to digital. We did not have TACFIRE at the time of this project, though we were scheduled to get it. We did have people who had been to TACFIRE school and who had good ideas on how to do the remoting with TACFIRE. They contended that this system should be able to interface with TACFIRE; however, it may require a different distribution system for the remote cable. We ran the remote cable directly to the local units in the vans because the distribution boxes (J-1077) and 26-pair cables impeded communications with the remotes.

I have no doubt that TACFIRE units could "talk" digitally using this system if they train heavily for it. I thought that we would have trouble with the remoting of voice nets; we did, but we overcame our difficulties. We trained hard, war-gamed, and went through myriad dry runs before we were able to come up with a system that minimized the number of inherent problems and maximized communications and survivability.

Thomas E. Hill
MAJ, SC
APO San Francisco

Doing Deception

Major Grodeki's article, "Dummy Doctrine" (January-February 1985 *Field Artillery Journal*), reinforces an important point. It's time we get serious about integrating deception into our overall survivability plans. However, Major Grodeki's suggestion that the focus of the deception effort needs to be at the battery and battalion levels has some problems. In the early 1980s, the 214th Field Artillery Brigade at Fort Sill attempted to integrate deception measures into the Army Training and Evaluation Program (ARTEP) exercises for its two Lance battalions. Allow me to share some of Brigade's findings with you.

With the help of units from Fort Hood the Brigade established its own opposing forces (OPFOR) reconnaissance force. This organization consisted of ground patrols, Mohawk aircraft (using pan and infrared film), and direction finding and signal security (SIGSEC) monitoring teams. The Brigade also fielded a deception unit which included about 10 soldiers commanded by a lieutenant. The deception team made use of 1/4-ton trucks with VRC-46 radios, two 5-ton trucks, camouflage nets, and a set of immersion heaters. It arrived in the field at the same time as the Lance battalions and varied its position, made displacements, and simulated the normal radio traffic of the Lance units.

First the good news. The Lance units using a combination of frequent displacements, good SIGSEC, and camouflage avoided detection about 95 percent of the time. The deception team was almost always identified. Moreover, OPFOR indicated that the deception personnel had played a significant role in distracting the OPFOR from the actual Lance units.

Now the bad news. The major problem with employing deception at unit level is coordination. For example, a deception team once did such a good job at attracting the attention of a Mohawk overflight that it drew the plane right onto a nearby Lance unit. By accident, the deception team had chosen to set up on the opposite side of the hill from a Lance firing battery. There will be numerous units occupying limited real estate on future battlefields. If deception is not to lead to disaster, it has to be approved and coordinated at higher levels. That is the only way to ensure that one unit doesn't compromise another's position.

Another problem is that deception is labor intensive. Our deception team required about 10 percent of a firing battery's resources. I doubt if any Lance battery commander would willingly give away 10 percent of his resources. He simply cannot spare them. In fact, during our ARTEPs the deception team came from another Fort Sill Lance battalion because the units taking the ARTEP could not spare the resources for a deception effort.

I don't want to throw a wet blanket on Major Grodeki's ideas. They have merit. Certainly, resources could be pooled at the brigade level and deception efforts coordinated through the division G3. But is the US Army ready for even that? I have participated in numerous division- and corps-level exercises, but I have never witnessed a seriously played deception game. Perhaps it's time we started taking these chores seriously.

I would like to add that I found Sergeant Ward Wright's article, "Security Blanket" (January-February 1985 *Field Artillery Journal*), fascinating. Such a device would also provide a degree of emergency nuclear, biological, and chemical protection. By the way, good issue, one of the best I've read in a long time!

James Jay Carafano
CPT, FA
Laurel, MD

Operations Security Forgotten

Although they consider the problem of field artillery survivability in terms of dispersion, hardening, and displacement (January-February 1985 *Field Artillery Journal*), Colonel Robert B. Adair and the 17th Field Artillery Brigade Action Group ignore some simple expedient techniques. They tend to forget that a unit which is not located cannot be targeted. In terms of avoiding detection, there is a wide range of improvements available within existing organizational and equipment structures.

Colonel Adair alludes to the requirement of physical security for field locations with his comment of reactive observation and listening posts, but he fails to emphasize pro-active measures such as coordinating with local maneuver units. Anything which keeps the enemy "at arm's length" protects us. The principle is the same as the fence around posts and kasernes—anyone who is kept physically separated from our equipment cannot touch it.

Although he notes the Soviet Signal Intelligence (SIGINT) threat, Colonel Adair does not admit that we have many means at our disposal to limit that vulnerability. When employed, current procedures for radiotelephone operators are sufficient to reduce the likelihood of detection. Certainly the radios will still broadcast signals, but it will take the enemy many more intercepts to locate the transmitter. Thus, our survivability will be enhanced. Moreover, electronic security (ELSEC) measures applied to the Firefinder radars and other noncommunication emitters, such as meteorological data systems and chronographs, will also enhance survivability.

The continued application of an effective information security program will provide added benefits because the enemy will not know where to look for us. The old adage, "Loose lips sink ships," applies today. If overeager doctrine writers and briefers don't tell the enemy that all our prescribed nuclear loads will be concentrated in the battalion trains, the opponent will continue to look around the entire battlefield to find it. If we do a better job of covering our tracks in peacetime, the enemy will not be forewarned regarding which units to expect in any given geographical area. Nor will he have foreknowledge of the task organization of our forces if we abstain from publishing exhaustive reports of all joint and combined exercises in local newspapers.

A final method of enhancing our survivability is through the proper application of camouflage. If we do not consider what we will leave behind in position areas, we will continue to compromise our security. If our positions are not adequately cleared prior to departure, enemy reconnaissance forces will be able to identify approximate unit size (the number of holes), number of weapons (construction of the positions), type of howitzer (residue and spade holes), and whether the unit is divisional or corps artillery (number of tubes per position).

All of the measures are doctrinal and many are incorporated in Army Training and Evaluation Programs as established tasks and standards. If we simply apply existing procedures which keep us from being detected, we don't really need new methods to survive. The implementation of a comprehensive operations security program will provide a fourth method beyond dispersing, hardening, and movement to enhance the survivability of the field artillery.

George T. Norris
CPT, FA
Fort Sill, OK

Survival on the AirLand Battlefield

One small aspect of Colonel Robert Adair's excellent article "I think, therefore, I survive" (January-February 1985 *Field Artillery Journal*) bothers me. I detect a defensive slant.

His definition of survivability is, "sustaining a percentage of the field artillery force approximately equal to the strength of the supported force." Is this AirLand Battle doctrine?

His assumptions—tactical operations centers detected and targeted in 12 hours and batteries detected and targeted in 6 hours—are overly pessimistic.

I suggest we define survivability in offensive terms: by how much enemy equipment we destroy, by how well we destroy the enemy's will to resist, and by how well we protect friendly forces. An artilleryman's chances of surviving are highest when he and the maneuver unit he supports are most successful in destroying the enemy. Returning fire (not mentioned in the article) is an ideal survivability technique; it does not hinder our support of the maneuver arms and it reduces the enemy's ability to strike us.

Do the recommendations in "I think, therefore, I survive" fit AirLand Battle doctrine? The most accurate answer is a qualified *yes*. I concur with the 17th Field Artillery Brigade Action Group on several points. We need to improve the mobility of the Firefinder radar; add position and azimuth determining systems to the battery operations center and earth-moving equipment to the battery. We also need faster howitzers; howitzers that shoot farther; howitzers with faster rates of fire; better ammunition-handling equipment; more mobile ammunition transport vehicles; more mobile fire support team (FIST) and fire support officer (FSO) vehicles; more multiple launch rocket system battalions; an integrated, automated intelligence-targeting system; and remotely piloted vehicles (now). Most importantly, we need institutional training and doctrine that produces FISTs, FSOs, field artillery staff officers, and commanders with the initiative, skill, and imagination to apply AirLand Battle doctrine.

Christopher A. Cortez
CPT, FA
Fort Sill, OK

Joint Operations

The Urgent Need to Look Back

I read, with a great deal of interest, Major Scott McMichael's recent article "URGENT FURY: Looking Back and Looking Forward" (March-April 1985 *Field Artillery Journal*). Major McMichael rightly states that post-operation analyses should take a critical viewpoint with the goal of deriving the maximum benefit from our mistakes. With that in mind, I feel a couple of comments concerning predeployment fire support planning are in order.

First, according to Major McMichael, initial fire support planning for the 82d Airborne Division began shortly after the 2d Brigade was notified of the impending operation (22 October, I believe). Since the operation was to involve only one brigade, only the 2d Brigade fire support officer as well as the commander and S3 of the 1-320 Field Artillery were brought into the planning process. The division fire support element and the division artillery commander were excluded until 24 October when the 82d was placed on alert. This grevious omission was done for operations security reasons! Surely this is one mistake from which we can learn.

Second, while "key planners in the 2d Brigade were hard at work from 22-24 October, the division G3 and others met at the United States Atlantic Command in Norfolk to discuss the operation at the joint level." Again, no fire support representatives from the division were included. Why? Had this *conscious oversight* not occurred, many of the problems encountered might have been avoided.

Finally, if we really intend to fight and win on the AirLand Battlefield, and if we really want to integrate fire support in combined arms and joint operations, then we had better start including fire support personnel in the planning process.

D. A. Okland
MAJ, USMC
Fort Sill, OK

Expanding on SEAD

I read Major Bob Ashey's article entitled "J-SEAD: Doing it Together" (March-April 1985 *Field Artillery Journal*) with a great deal of interest. The ability to suppress enemy air defense (SEAD) must be of critical concern when we consider the tremendous cost of aviation equipment, the sophistication of the Threat air defense, and most important, the value of our aviators, both green and blue suiters. As a result of this concern, there are two major actions in progress which affect SEAD.

Major Ashey mentioned the work being done in response to Initiative 15 (J-SEAD) of the Joint Service Agreement. Although it is a joint project, US Army Training and Doctrine Command (TRADOC) has been given the task of determining ammunition planning factors to be used in accomplishing J-SEAD. The other action could be called "Army SEAD: Doing it Alone." This action, which has been directed by the Vice Chief of Staff, US Army, looks at the Army's capability to protect its own aviation assets during the initial stages of a conflict when the Air Force will be fighting the counterair battle.

A number of key observations have emerged as a result of both of these efforts. First, from a fire support standpoint, effective J-SEAD is a difficult challenge for the fire support system as a whole. It demands the timely coordination of a variety of joint- and combined-arms target acquisition assets and attack systems. These systems include a heavy reliance on nonlethal electronic warfare systems. Second, SEAD as a type of fire requires the systematic attack of the entire enemy air defense system (command, control, and communications; target acquisition; and weapons and munitions). It should be noted that the so-called SEAD targets of opportunity may in fact be counterfire targets in accordance with FM 6-20's, *Fire Support in Combined Arms Operations*, definition of counterfire.

Major Ashey has correctly stated in his article that the Army has primary SEAD-execution responsibilities out to the limits of observed fire. However, as the Army improves its ability to see and shoot deep, the fire support system will be better able to provide fires beyond the ranges currently associated with today's observed fire. Also, the fire support system will be tasked to support the deep portion of the AirLand Battle. Perhaps a doctrinal modification is needed for SEAD areas of responsibility.

The bottom line is that SEAD is something we need to do better, both as an Army type of fire and as a joint undertaking.

Bill Rittenhouse
DCD, Fort Sill, OK

Joint Course Support

The following naval fire support and amphibious training is available to Army units and individuals.

Jeff Kline
LT, USN
San Diego, CA

Title of Course	Course Description	Location	Duration	Command	Point of Contact
Naval Gunfire Operations Orientation (Army) (H-2G-3627)	Designed to train Army officers and NCOs as well as Air Force combat air controllers on how to integrate naval gunfire into their fire support plans.	Naval Amphibious Base Coronado, CA	1.5 days	Landing Force Training Command	G3 Scheduling Officer AUTOVON 987-9601
BLOC Training (H-2E-3100)	Designed to provide amphibious training for US Marine Corps and Army infantry battalions. Culminates in a 3-day amphibious landing exercise.	"	9 days	"	"
Landing Force Staff Planning (H-2E-3101)	Designed to train the staff of a battalion landing team in the principles and techniques of command and staff action from receipt of the mission through development of detailed plans for an amphibious operation.	"	5 days	"	"
Fire Support Coordination (HE-2E-3114) (SECRET)	Designed to prepare students for duty in fire support coordination billets in battalion, regimental, and marine Amphibious Group Task Force Fire Support Coordination Centers (FSCC). Unclassified 2-and 5-day courses are available by mobile training team. Staff NCOs filling FSCC billets may attend modified courses.	"	10 days	"	"
Small Unit Leaders Supporting Arms Orientation (H-2G-3649)	Designed to introduce the leaders of an infantry battalion to the procedures used to obtain and control field artillery, naval gunfire, and close air support.	"	5 days	"	"
Naval Gunfire Staff Officer (A-2G-0044) (SECRET)	Designed to prepare naval and Landing Force staff officers and senior NCOs of the US Armed Forces and Allied Military Forces at the Amphibious Task Force/Landing Force levels involved in naval gunfire support including the proper techniques of planning, execution, and coordination of naval gunfire during an amphibious operation.	Coronado, CA	2 weeks	Naval Amphibious School	AUTOVON 987-9270
Supporting Arms Coordination Center (A-2G-0045) (Confidential)	Designed to provide officers of the US Armed Forces with an introduction, background, and basic knowledge required to use supporting arms in an amphibious operation.	"	1 week	"	"
Army Basic Unit Amphibious Training Command (G-9E-950-4506)	Designed to provide basic amphibious training for US Army combat support and combat service support companies and batteries.	Little Creek Norfolk, VA	5 days	Landing Force Training Command Atlantic	AUTOVON 680-7257/7313

Computers

Getting Fired Up About Fire Support Computers

Many Army units have purchased off-the-shelf computers to assist targeting cells and fire support elements to keep pace with the tempo, mobility, and firepower needed on the AirLand Battlefield. There is no standardization of equipment or software for these computers. None of these computers has been field-hardened or soldiertested; none has a large enough memory to store or process the required information; and none can interface with the tactical fire direction system (TACFIRE).

A separate common computer is needed by the targeting cells and fire support elements, because in a battlefield environment TACFIRE will be too busy to support the fire support programs. When TACFIRE's memory is full, it starts overlaying its memory with new data. The function that is overlaid first is the fire support element program. The shortcoming could be overcome internally by modifying the software, but other areas of interest would be sacrificed.

The creation of the targeting cell without a thorough investigation of the equipment needed for its operation has caused various units to seek their own nonstandard systems. Targeting cells and fire support elements deserve better. They need a common separate computer that interfaces with TACFIRE.

Leslie B. Scott
CPT, FA
Fort Sill, OK

According to experts in the Field Artillery School's Directorate of Combat Developments, a research and development contract was awarded in May 1984 for the Advanced Field Artillery Tactical Data System (AFATDS) program. This program will do away with the central data-based TACFIRE system and replace it with a distributed data-based system. Each user will have a smart terminal or a microcomputer to run that station's programs. Every station on this net will be able to run the programs of the other stations. As an example, if a fire direction center (FDC) station goes down, the supervising fire support element will be able to do all the functions of the FDC on the shared net. Also, if one computer goes down, the entire data base is not lost. Captain Britt E. Bray from the Tactics and Combined Arms Department responded to Captain Scott's letter in a slightly different manner. His observations appear below.—Ed

Near-Term Solutions

Captain Leslie Scott's letter points out a growing problem that is facing the modern field artillery. Fortunately, the Field Artillery School has been aware of this problem for a good while and has been working hard to develop a solution. As pointed out in the editor's note which accompanies Captain Scott's letter, the long-run solution to the problem is tied to the Advanced Field Artillery Tactical Data System (AFATDS) which is intended to replace the tactical fire direction system (TACFIRE) sometime in the 1990s. In the meantime, an effort is being made to develop an interim solution in the form of an Army approved computer hardware and software package. This interim system, if developed, will be field-hardened, tempest-proof, and electromagnetic pulse-hardened. In addition, it will be able to interface with TACFIRE and will be standardized throughout the Army.

Currently, the development process is at its beginning stage. The Field Artillery School's Directorate of Combat Developments (DCD) has put together an operational and organizational plan to develop the computer, but nothing has been designed or selected for purchase.

Meanwhile, there are a couple of good alternatives available to today's fire support elements and targeting cells. Besides the off-the-shelf computers that some units have purchased on their own, most division, brigade, and corps in the active Army have been issued an Apple II-E and the target analysis planning system (TAPS) software. Officers and noncommissioned officers attending the Field Artillery School's Nuclear Tactics Course receive instructions on TAPS before going to their units.

TAPS will also work on the MICROFIX computer system that is currently in use in the All-Source Intelligence Center (ASIC) at all active Army divisions and corps. MICROFIX has been field-hardened and is tempest-proof but does not interface with TACFIRE. Furthermore, it must be shared with the ASIC.

Probably the best alternative available is one that already exists and has been proven. This is, of course, the TACFIRE system and the fire support element (FSE) function it contains. Every TACFIRE-equipped division and corps has a variable format message entry device (VFMED) in its fire support element at both the tactical and main command posts. These devices are used to access the fire support element function in the TACFIRE computer and to provide a secure digital link between the fire support element and the division artillery tactical operations center for coordination and planning purposes.

The TAPS software that is currently being used provides a nuclear target analysis capability and a *limited* nuclear fire planning capability. TACFIRE's fire support element function provides a capability for nuclear and preliminary target analysis, nuclear and integrated fire planning, vulnerability analysis, and fallout prediction.

I submit that the most sensible option in terms of optimizing available assets is to continue to use the TAPS for nuclear target analysis and TACFIRE for the other functions mentioned above. Additionally, the results of the target analysis performed by the TAPS can be input to TACFIRE and used for instructing the computer to use specified units for attack of certain targets in a nuclear fire plan.

In this way, both assets are used effectively, and lengthy transmission and processing time is saved by cutting out the nuclear target analysis processing at TACFIRE. Interface with TACFIRE is no longer a problem as the fire support element's VFMED provides a secure digital link to TACFIRE and the business end of the artillery system.

Britt E. Bray
CPT, FA
Fort Sill, OK

Multiple Launch Rocket System Tactics

by Captain Richard M. Bishop

. . . each launcher crew has the ability to receive a digital fire mission while positioned in a hide area, move to a launch area, compute the technical firing data, orient on the target, fire its 12 rockets, and leave the launch area—all within 3 minutes.

American forces must be prepared to fight and win against the well-equipped, highly mechanized, and numerically superior forces of the Warsaw Pact countries. Military operations on a European battlefield will be of a greater scope, intensity, and mobility than witnessed on any previous battlefield.

The tenets of initiative, depth, agility, and synchronization—the foundations of AirLand Battle doctrine—have been developed to counter this threat. For this doctrine to be effective, however, the equipment that US forces will use in combat must be capable of exploiting these tenets to the maximum extent possible.

To defeat the Threat, US forces need weapon systems and associated tactics, techniques, and procedures that can effectively counter the enemy's massed artillery as well as engage dense formations of mechanized forces. The weapon systems must be highly mobile, facilitate rapid command and control, and be capable of delivering large volumes of fire. The multiple launch rocket system (MLRS) meets all of these pressing requirements.

MLRS Capabilities

The MLRS is a surface-to-surface weapon system designed to complement cannon artillery in the support of maneuver forces by destroying, neutralizing, and suppressing the enemy. Although the MLRS is primarily a counterfire weapon, it can fire in the suppression of enemy air defenses (SEAD); engage high density mechanized targets during surge periods; and provide interdiction fires against such follow-on elements as troops, light equipment, target acquisition systems, logistics centers, as well as command, control, and communications (C^3) systems. To enhance their survivability, MLRS launcher crews employ shoot-and-move tactics. Using an on-board fire control system, each launcher crew has the ability to receive a digital fire mission while positioned in a hide area, move to a launch area, compute the technical firing data, orient on the target, fire its 12 rockets, and leave the launch area—all within 3 minutes. Although the launcher has a crew of three personnel for optimum performance, a single crew member can perform all of these operations. The rockets can be fired individually, as a full-load ripple against a single target, or against 12 different aimpoints. Maximum range of the rocket, which contains 644 dual-purpose improved conventional munitions (DPICM) bomblets, is over 30 kilometers. Each submunition has the capability of penetrating 2½ to 4 inches of armor plate and has a kill radius of 3 meters against personnel targets. During a full-load launch of 12 rockets, one launcher can saturate a 60,000-square meter area with close to 8,000 bomblets.

The MLRS is well-suited to support AirLand Battle operations. With its ability to engage multiple targets with a high concentration of munitions, the MLRS can contribute to halting enemy advances by inflicting mobility kills on tanks, destroying armored personnel carriers including BMPs and BRDMs (both Russian armored personnel carriers), incapacitating air defense weapons such as the ZSU 23-4, and inflicting losses on dismounted infantry. Moreover, it can disrupt the enemy's C^3 facilities by destroying enemy command shelters and personnel, thus giving friendly forces the ability to seize the initiative. The MLRS can engage all of these targets at ranges beyond the reach of cannon artillery.

The launcher, mounted on a derivative of the Bradley Fighting Vehicle chassis, has excellent cross-country mobility. This mobility allows MLRS units to maneuver with the supported force and facilitates agility in rapid tempo operations. Synchronization is achieved through the battery's ability to communicate digitally with the tactical

fire direction system (TACFIRE). This capability gives the force commander a means to integrate his concept of the operation with the fire support system. This year, when each platoon will have limited digital communications with TACFIRE by use of the platoon leader's digital message device (DMD), MLRS platoons will be able to perform limited tactical missions, thus providing more flexibility within the battery.

MLRS Employment

MLRS battalions are assigned to corps, and MLRS batteries are organic to heavy divisions. MLRS batteries are currently being fielded as part of a composite 8-inch and MLRS battalion. This battalion has two 203-mm howitzer batteries with six howitzers each and one MLRS battery with nine launchers. Under the Army of Excellence (AOE) plan, the MLRS battery will become a separate battery under the division artillery, while the division's 203-mm howitzer assets will be moved to the corps.

As with any other weapon system, effective use of MLRS will depend largely on battlefield information. Intelligence, surveillance, and target acquisition assets must be fully utilized to identify targets in the commander's areas of influence and interest.

Offensive Operations

On the AirLand Battlefield, successful commanders must use surprise and maneuver to force decisive engagements. They must seize the initiative to win. MLRS is uniquely suited to provide the needed firepower in support of a decisive tactical attack. It can support all five types of offensive operations: movement to contact, hasty attack, deliberate attack, exploitation, and pursuit.

• The *movement to contact* gains or reestablishes contact with the enemy and uses rapid movement, decentralized control, and combined arms forces in the operation. The MLRS can augment the fires of the direct support cannon unit supporting the maneuver force. For example, an MLRS battery, or possibly even a platoon, can be given a nonstandard reinforcing mission (no liaison capability) to a field artillery battalion in direct support of a brigade conducting a movement to contact. Throughout this operation, at least two launchers per platoon must be positioned to provide support while the remaining launcher displaces to keep pace with the maneuver force. MLRS units supporting a movement to contact must be located to exploit opportunities should either a hasty or a deliberate attack occur or should the supported maneuver unit assume a hasty defense.

• In the *hasty attack*, the MLRS can support operations by firing preparations, isolating objectives, and by closing the battle area to enemy reinforcements and resupply elements. Care must be taken, however, to ensure that the launchers do not outpace their own logistic support. Such a situation might well stall the momentum of the attack.

• Because of the logistics concern, MLRS is perhaps better suited to support the *deliberate attack*, where support can be more carefully planned and executed.

• *Exploitation*, following an attack, allows forces to seize deep objectives. The MLRS can support exploitation by denying the enemy the chance to regroup and establish a defense, by disrupting his withdrawal, by suppressing his reserves and rear guard, and by massing on choke points along major avenues of retreat.

• The *pursuit* is designed to close in on and destroy enemy forces that have lost the ability to resist. MLRS fires can isolate the faltering enemy, and, as in exploitation, mass on choke points to deny an enemy withdrawal.

Defensive Operations

Defensive operations are designed to defeat an enemy attack and to give the friendly forces the time needed to seize the initiative and begin offensive operations. The defender is likely to have many advantages over the attacker: He should know the ground better, and he should construct strong positions reinforced by obstacles that deny the attacker freedom of maneuver. The defender should be able to fight under cover of his artillery and air resources, whereas the attacker may well have to fight out from under much of his own support. The MLRS can be an overwhelming force in support of defensive operations. With its extended range, MLRS can engage enemy forces in-depth and degrade their ability to fight. It can separate infantry from tanks, cause confusion in the attack, and disrupt the continuity of the enemy's combined arms operations.

Positioned to the rear—approximately 15 kilometers from the forward line of own troops (FLOT) during the defense—MLRS can range the enemy's organic, doctrinally deployed artillery assets including both the Regimental Artillery Group (RAG), which contains 120-mm M1943 mortars and 122-mm M1974 self-propelled howitzers, and the Division Artillery Group (DAG), which adds 152-mm M1973

self-propelled howitzers, BM-21 multiple rocket launchers, and FROG 7s to the RAG's capabilities. The RAGs will be 1 to 4 kilometers and DAGs 3 to 7 kilometers behind the leading edge of the enemy's attacking force. MLRS units deployed in such depth should also be able to engage first- and second-echelon motorized rifle battalions.

When positioned approximately 5 kilometers from the FLOT, the MLRS can attack not only the first-echelon motorized rifle regiments but also the lead elements of a doctrinally deployed second-echelon regiment. This positioning will allow MLRS to fire on such air defense weapon systems as the SA-7 GRAIL, the SA-9 GASKIN, and the ZSU 23-4 against which the MLRS submunitions can inflict tremendous damage.

Covering Force Operations

MLRS units supporting covering force operations should be given tactical missions that are responsive to the covering force commander's scheme of maneuver and that are commensurate with maximum feasible centralized control. For example, in a division covering force operation the divisional MLRS battery should be given a general support or a nonstandard general support reinforcing mission (no liaison capability) to allow support to either the division as a whole or to allow reinforcing fires to the direct support cannon battalion in support of the most vulnerable maneuver brigade.

In either case, positioning is crucial. To be effective, MLRS units must be able to range those targets—artillery units, BMPs, tanks, or observers—that will critically affect the battle. To meet this requirement, MLRS units may initially be positioned forward of the forward edge of the battle area (FEBA) but behind the covering force. Care must be taken to ensure that this position does not interfere with the covering force's ability to withdraw quickly, nor should such forward positioning needlessly place the MLRS unit in jeopardy of ground attack.

Provision of target acquisition assets to the MLRS unit should be considered. It may be necessary to move an AN/TPQ-36 radar forward to support the covering force by attaching it to the direct support battalion. This Firefinder radar would identify counterfire targets for attack by MLRS units. Other considerations affecting MLRS employment with a covering force include the increased security risk for the launchers, the availability of logistical support in the forward area, the availability and priority of survey assets, the number of suitable firing areas, and the availability of sufficient routes of march.

As the fight moves into the main battle area, positioning remains critical. Responsiveness is the key; however, the locations of friendly maneuver forces, observation posts, radar installations, and forward support areas must be considered as they may come under enemy counterfire directed at the MLRS launcher. MLRS units must be able to range all targets in the sector of the enemy's main thrust. They should be far enough forward so that the MLRS can engage the enemy in-depth, but not so far as to risk needlessly the security of a launcher. As in covering force operations, MLRS positioning should not interfere with the supported maneuver force's operations. Launchers should not, for example, be placed along high-speed avenues of approach or in the vicinity of preplanned kill zones where shaped enemy penetrations could force the MLRS to displace at a critical time.

MLRS Battalion Employment

The MLRS battalion at corps level has considerable muscle. Its three firing batteries contain 27 launchers, 54 10-ton resupply trucks and trailers, and 12 M577 command post vehicles. It has the ability to carry on its organic resources close to 3,000 rockets containing nearly two million submunitions. Such massive firepower gives the corps commander a decisive tool with which to influence the battle. Although

it can execute standard missions, it can also perform innovative fire support tactics such as brief, violent preparations.

In any case, the corps commander tailors it along with his other assets to meet mission requirements. Command and control of the MLRS battalion may be through a field artillery brigade headquarters or through a subordinate maneuver unit such as a division. For example, the corps commander can attach the MLRS battalion to an artillery brigade and give the brigade a tactical mission, or the corps commander could attach the MLRS battalion to a subordinate division. The division commander, advised by his fire support coordinator, would then establish a command relationship and assign the battalion a tactical mission. Another option for the corps commander is to maintain immediate command and control of the MLRS battalion and assign the battalion a tactical mission such as general support. He could also assign the battalion non-standard reinforcing or general support reinforcing missions (no liaison capability), making it more responsive to a specified subordinate organization. Finally, one or more batteries of the corps MLRS battalion may be detached from the battalion and be further attached to a subordinate maneuver force or to another field artillery headquarters.

The MLRS is a responsive and flexible fire support system that provides the field artillery and the combined arms team with an unprecedented ability to influence the battle. To realize its full potential, commanders and staff officers at all levels must not only gain a full knowledge of its capabilities and employment doctrine but also put that knowledge to work. Only then can the field artillery provide the firepower that the maneuver forces deserve.

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A REDLEG SOLUTION

by Captain Howard E. Lee

Graduates of every basic or advanced course know the maxim that Combat Power = Maneuver + Firepower. Unfortunately, today's fire support coordinators often generate combat power far below its full potential. If America's soldiers are to win on tomorrow's battlefield, they must achieve maximum combat power. It is, therefore, essential that field artillerymen—upon whose shoulders the heavy responsibility of integrating all fire support naturally falls—begin making some tough decisions in terms of staffing fire support elements and training fire support coordinators.

For some time, critics within the Field Artillery Community have questioned the priorities that determine the staffing of our fire support agencies versus that of cannon batteries. Such critics observe that fire support elements generally receive secondary consideration in terms of officer staffing, stability, and training time. Commanders put their best and brightest soldiers in stable, high-priority command positions. This situation flies in the face of harsh reality.

Photo by Captain Patrick Sweeney

The Challenge

Perhaps the most complex task facing any American field artilleryman is that of fire support coordination. This task requires a talented officer with an extensive knowledge of fire support capabilities and fundamentals. Because of the dynamics and rapid pace of the AirLand Battlefield, the fire support coordinator (FSCOORD) will have to be able to think on his feet. He will have to make critical decisions relying on his experience and background to compensate for the lack of planning time. Moreover, he will be the senior fire support expert available to the maneuver commander, and as such he will have many specified and implied tasks to discharge.

First and foremost he will be responsible for the integration of all fire support available to that maneuver commander

to include the field artillery, mortars, naval gunfire, and close air support. He must know how to tie these tools and many others—electronic warfare and barrier planning to mention but two—into not only the commander's scheme of maneuver but also into the engineer plan and the air defense program. This requires a degree of technical competence and understanding that touches on every dimension of fully integrated combined arms operations. The FSCOORD has to be an individual whose career development has given him the experience and training to take on these extraordinarily demanding tasks.

Of course, field artillery battalion commanders feel compelled to place fully qualified captains in battery command positions and capable lieutenants in firing battery slots. This natural desire poses a dilemma: The battalion commander would like to support the maneuver unit better, but he must also maximize performance in his subordinate artillery elements.

The Solution

One viable solution to this complex problem calls for the battery commander to assume not only his command responsibilities but also those of the fire support coordinator for the maneuver battalion that his battery supports. This scheme roughly parallels the relationship of field artillery commanders and FSCOORD at brigade and division levels. In order to support this solution, however, two changes in the close support battalion's table of organization and equipment (TOE) would be necessary. In order to support the battery commander's new responsibilities, the firing battery will require an executive officer, a position eliminated under the J-series TOEs. The battalion fire support officer position would, of course, become needless and could be eliminated.

"It is axiomatic that rapid turnover and lack of experience breed mediocre performance."

The Situation

Under the current system, the officers assigned to fill the fire support coordination roles at company and battalion level are perhaps the weakest link in the entire fire support coordination system. If it is to be resolved, this unsatisfactory situation demands basic attitudinal and behavioral changes on the part of most field artillerymen. The widely held notion that the fire support team (FIST) chief's position is a relatively simple job easily filled by a new second lieutenant is *wrong.* The FIST chief is the primary fire support coordinator for a company and normally has access to more combat power than any other single source available to the company commander. His position should not be a test bed for evaluating new lieutenants, nor should it be a haven for lieutenants who "can't make it" in the batteries. Rather, the complex position of FIST chief requires a skilled, experienced field artilleryman who understands fire support in general and cannon battery operations in particular.

A similar problem exists regarding the fire support officer (FSO) at battalion level. The FSO position is rarely filled by an experienced captain with an extensive fire support and cannon battery background. More often than not, battalion fire support officers are captains freshly assigned to field artillery units, or they are senior first lieutenants completing their initial tour of duty. In either case the fire support officer will not be stabilized in his position for any length of time. In consequence, the supported maneuver unit and combat power suffer. It is axiomatic that rapid turnover and lack of experience breed mediocre performance.

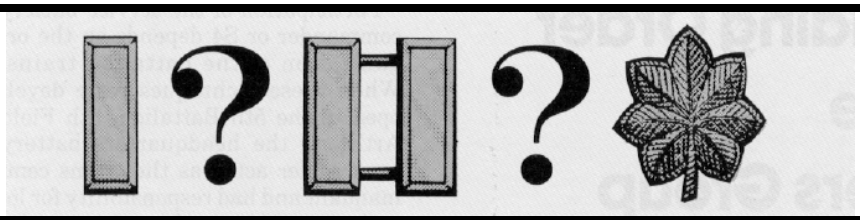
"In the British Army the battery commander is a major, and he is the fire support coordinator for a maneuver battalion commander."

Generally, the first reaction most artillerymen have to this suggestion is that the battery commander will be unable to accomplish all the tasks required of him. The proposed solution will admittedly place additional responsibilities on the battery commander. It calls for him to improve upon his own level of technical skill and forces him to delegate many of the jobs he personally discharges. Fortunately, under the new 3 by 8 battery concept the platoon leader will already be accomplishing one of the normal tasks of the battery commander—the reconnaissance, selection, and occupation of position. The commander of a J-series unit need only do a general area reconnaissance, a task which could easily be done by an experienced executive officer. Logistical duties could also be assumed by the executive officer. In terms of running the actual cannon position of his battery, the commander already delegates the computation of firing data to his fire direction officer (FDO). Moreover, the guns are fired by qualified gun chiefs under the supervision of platoon leaders. Thus, the tasks normally done in the firing battery positions generally do not require the presence and experience of the battery commander. In fact, tasks undertaken at the battery normally amount to battle drills, and if the element is properly trained it can execute these drills regardless of the presence of the commander.

On the other hand, the fire support coordinator's responsibilities require experience and creativity. This is especially true at the battalion level where the job is normally done without the benefit of extensive planning time.

The proposed solution will also allow the battery commander to have a much better understanding regarding the way the battle is developing and of how his battery can best be used to support the scheme of maneuver. Instead of the fire support officer telling the direct support artillery battalion S3 where and when the maneuver commander would like the batteries moved, the battery commander would personally see the big picture at the maneuver unit's command post. This would allow him to anticipate the maneuver unit's needs, and his estimates and recommendations to the maneuver commander should be better conceived than those developed by a separate fire support officer. After all, the battery commander should know his battery's capabilities far better than someone outside his organization. Moreover, because he is an integral element of the close support battalion chain of command, he will be able to coordinate more effectively with his artillery battalion S3 to maintain the battalion's ability to mass fires.

Another point that can be made in support of this "Redleg solution" is that it is already a proven system. Several countries—most notably Great Britain—have established this fire support relationship. In the British Army the battery commander is a major, and he is the fire support coordinator for a maneuver battalion commander. To assist him with the battery, he has a captain as second-in-command,



a lieutenant who fills the role of gun position officer, one fire direction officer, and two fire direction warrant officers. Two additional captains (three in wartime) fill positions similar to our FIST chiefs.

Ancillary Benefits

An additional benefit of this structure is that a close support battalion organized in this fashion will help to reduce the manpower crunch that exists at the captain level. It calls for the reduction in the required number of captains by one and for an increase in the required number of lieutenants by one. The battalion will, therefore, suffer no net change in its officer strength, but the ideal pyramidal structure of the officer corps will be more closely realized.

In terms of career enhancement, the proposed solution will enhance the junior officer's professional development by keeping his focus on supporting maneuver. A new lieutenant could anticipate the following progression: His initial assignment would be as a battery fire direction officer. In time, he would move up to the platoon leader's position and acquire an in-depth understanding of battery operations. Eventually, he would assume the responsibilities of a FIST chief. The maneuver company commander would then have a well-trained, experienced fire support coordinator who is both confident in his actions and considerably more capable in making estimates and recommendations. Once the lieutenant has completed his time with the fire support team, he would be fully prepared to take on the challenging duties of the executive officer.

This proposal will enhance our officer development in other significant ways. Officers throughout the battery will acquire experience gained by the assumption of additional responsibilities. Of course, the ultimate responsibility for everything that occurs in the battery still would fall on the commander. However, due to the more decentralized nature of this system, responsibility in its broader sense devolves to junior officers.

The battery commander cannot be in all the places he would like to be or be checking all those tasks he would like to check. Obviously, he will not be able to micromanage his organization. His subordinate officers will be operating in a fairly independent fashion with immediate responsibility for their platoons or FIST elements. This will serve to produce more professional, competent leaders who will be prepared for greater responsibility as they progress through the structure. In the long term the King of Battle will begin to see captains in battery command slots who have had the benefit of this logical development and who will in turn be able to develop better their own subordinates. The artillery's officer corps will be strengthened, and our support for maneuver will be enhanced.

The Disadvantages

Unfortunately, there are several negative aspects to this proposal. A major disadvantage will be the loss of the habitual relationship that now abides between maneuver units and their fire support officers. However, it should be noted that due to the nature of the 4 to 3 ratio of maneuver battalions to artillery batteries under the new J-series TOEs, a breakdown of this sort was going to occur anyway. The negative aspects of this situation can be reversed by a competent battery commander bringing a well-trained team to whatever maneuver battalion or task force he is assigned to support. At different times the battery commander might well be called upon to support each of the different maneuver task forces organized within a brigade. But this is no more problematic than the current situation in which fire support officers are run through the maneuver battalion's headquarters with only 3 to 12 months of stability.

Another disadvantage is that unlike the fire support coordinator at brigade and division level, the battery commander does not have a staff to assist him in the operation of his organization, and as such his situation does not parallel that of his higher-level artillery commanders. However, one should note that with the degree of logistical centralization and consolidation that will be inherent to the 3 by 8 concept, the requirement for an individual to deal with such things as mess, ammunition resupply, and maintenance will decrease substantially. Responsibility for coordination of these tasks plus those items not consolidated can be handled by a capable executive officer working in conjunction with his two platoon leaders.

Some problems may develop in terms of operational control over the battery commander. Consideration must be given to how the brigade fire support officer and the direct support battalion S3 will influence the battery commander. Where does the trade-off occur between positioning and using the battery in support of massed battalion missions and employing the battery in support of the maneuver task force or battalion? The answer would appear to lie with the direct-support battalion commander. He is, after all, the brigade fire support coordinator, and the overall responsibility for keeping fire support organized and effective falls to him. Difficulties arising between his S3 and brigade fire support officer must be resolved prior to an operation.

Conclusion

The effectiveness of the fire support coordination at the maneuver company and battalion level has been questioned and found wanting. The roots of the problem can be traced to the lack of experienced FIST chiefs and the assignment of underqualified officers to the battalion FSO positions. Under the present TOE of the direct support battalions, little can be done to solve this problem. However, with the proposed minimal changes to the TOE the field artillery can provide considerably better support to the maneuver commander.

Simply stated, the solution is to make the battery commander the maneuver battalion fire support officer and to add a battery executive officer to the 3 by 8 battery. The control of the gun positions will fall to the executive officer and platoon leaders; and fire support coordination will become the responsibility of the most experienced and capable officer—the battery commander.

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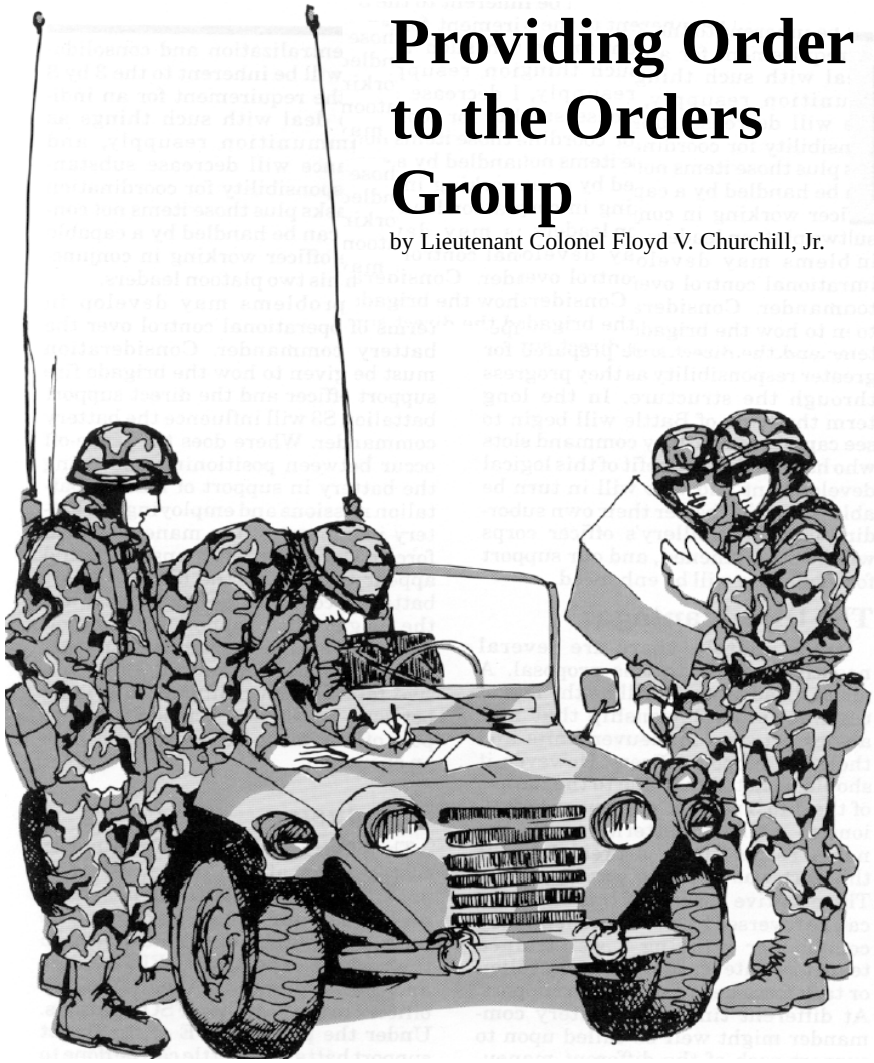
Providing Order to the Orders Group

by Lieutenant Colonel Floyd V. Churchill, Jr.



"Somebody get the CO ASAP, we just got orders to move the whole battalion to the other side of the corps front . . . now!"

Somewhere in a dimly lit battalion tactical operations center (TOC) on a battlefield as yet unknown, cryptic orders such as this are sure to be given as corps and division commanders struggle to move their limited artillery assets to the critical points on the battlefield.

An entity that can streamline the conduct of such difficult and time-sensitive maneuvers is called the orders group (OG). The approach described below is one battalion's experiences and lessons learned in accomplishing this type of operation in a training environment over the past 2 years.

The orders group is specifically designed to allow the commander to move the battalion in its entirety from one operational area to another. It is not used when a battalion is conducting relatively short movements associated with normal operations.

An orders group is organized to provide the necessary elements to command and control the battalion during movements from its current location either directly into firing positions at its destination or into a tactical assembly area (TAA). Experience suggests that the ideal organization to accomplish this challenging mission is as follows:

- Battalion commander.
- Battalion S3.
- Battalion Communications-Electronics Staff Officer (CESO).
- Battery commanders with their advance parties.
- Battalion jump TOC.

Participation of the service battery commander or S4 depends on the organization of the battalion trains. When these techniques were developed in the 5th Battalion, 8th Field Artillery, the headquarters battery commander acted as the trains commandant and had responsibility for locating, moving, and setting up the trains physical plant. Thus the service battery commander was not part of the orders group.

The process by which the orders group operates is perhaps best explained by use of an example: A battalion is in place on one part of the battlefield, and an alert message is received to move the unit quickly to a distant area. Several actions occur automatically:

- The battalion S3 requests movement times and routes from the controlling headquarters.

- The battalion S3 seeks clarification of the intended initial status of the unit upon arrival; that is, whether to go into action immediately or into a tactical assembly area.

- The liaison officer departs for the gaining headquarters.

- Tactical operations center personnel alert all orders group elements of the time and place to meet at a rendezvous point (RVP). The selected RVP is normally some point along the route to the new position that offers cover and concealment and a landing zone for a Blackhawk helicopter.

- The battalion commander issues a warning order to the battalion executive officer so that he can begin preparations to move the battalion trains.

- The battalion S3 issues to all major elements tentative movement orders which specify location, time, rendezvous point, and routes.

The follow-on actions of the battalion and battery commanders depend on the availability of reconnaissance aircraft and the ability to accommodate the battalion and battery commanders. If a utility helicopter is available, the members of the orders group are picked up immediately from helipads in the vicinity of their battery positions. The orders group then reconnoiters the routes and tentative forward positions or tactical assembly areas.

If an OH-58 aircraft is provided, the battalion commander himself handles the reconnaissance. He may elect to take the trains commandant if space allows. If no aircraft are available, the

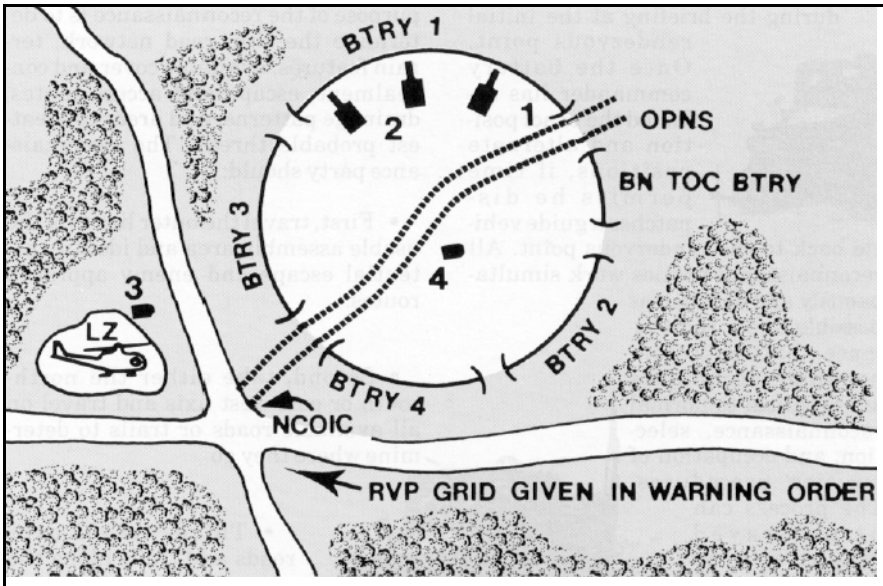
commanders travel with their advance party to the initial rendezvous point.

While leaders are doing their airborne reconnaissance, the noncommissioned officers in charge (NCOIC) of the various advance parties, along with the battalion S3, marshal and move their respective parts of the orders group. The S3, who should be the first to arrive at the designated rendezvous point, is responsible for setting up the position before the other elements arrive. The S3 selects the exact rendezvous point so it is in a covered and concealed location some 100 to 300 meters off of the main roads. The NCOICs stay in a concealed location in the immediate vicinity of the rendezvous point grid location given to the batteries. The S3 then positions each party. With the closure of the last group the rendezvous point laager looks similar to the sketch in figure 1.

Once all members of the orders group have arrived, the commander or battalion S3 briefs the assembled leadership. At a minimum, he covers the following items:

- Overview of the new tactical situation.
- Routes available.
- Requirement for immediate firing capability.
- Procedures for tying in with units at the new area of operations.
- Assignment of a release point and tentative battery areas (if moving directly into firing positions) and times to be in the firing status.
- Designation of the orders group objective areas if the battalion is moving into a tactical assembly area and tentative closing times for batteries at the release point.
- Any communications-electronics operation instruction changes required, and where and when they will take place.
- Actions in case of attack while en route.

If overlays are available for the new area and situation they should be issued by the S3 at this time. The whole briefing process should not take over 5 minutes. The commander then leads the orders group from the rendezvous point followed by the S3 and battery reconnaissance parties; the order of movement is determined by which unit is closest to the exit road from the



Notes:

1. Direction of travel into the laager is 12 o'clock; batteries occupy areas by standing operating procedures, filling in the order of 9 and 12, 1 and 3, 6 and 9, and 3 and 6. The battalion tactical operations center advance party occupies 12 and 1.

2. All vehicles spread out, and personnel dismount and face outwards under control of the advance party noncommissioned officer in charge.

3. If appropriate, the battalion commander's jeep waits at the helipad to transport the returning commanders to the laager. His jeep travels with the S3 to the rendezvous point if a helicopter is available for the leaders' reconnaissance.

4. Battery commanders report at the S3 jeep as soon as they arrive at the laager if they did not go with the battalion commander. The S3's jeep is parked in the center of the laager.

Figure 1. Rendezvous laager.

rendezvous point (see figure 2). Members of the orders group reconnoiter the route to the new area as they move along.

The action of personnel upon reaching the laager or release point depends on whether the unit is going into a firing position or a tactical assembly area. If the batteries are going to move into firing positions, the battalion commander will pull off the road at the release point to designate it. The various elements—tactical operations center, trains, and battery reconnaissance parties—continue to move independently from this location to reconnoiter potential positions designated by the battalion commander

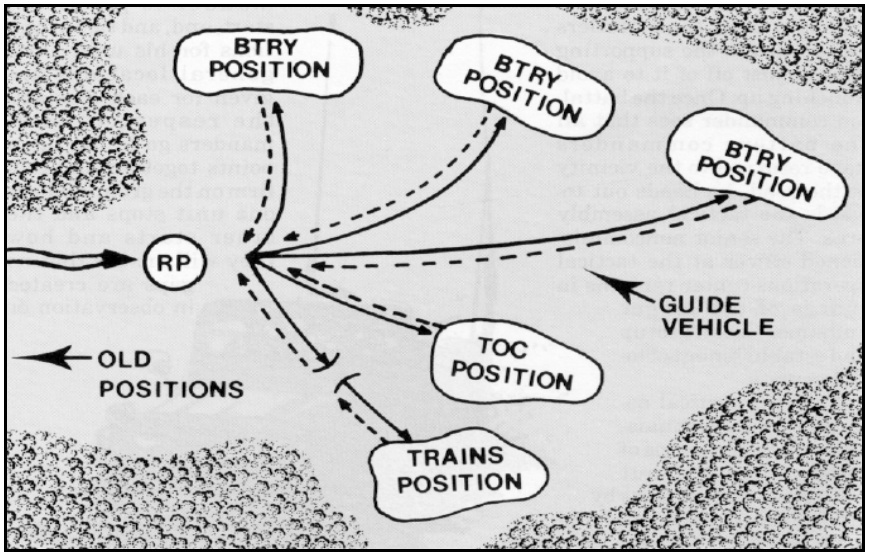


Figure 2. Forward laager area.

during the briefing at the initial rendezvous point. Once the battery commander has selected the exact position and alternate positions, if time permits he dispatches a guide vehicle back to the rendezvous point. All reconnaissance parties work simultaneously and as much as possible under radio silence. Battery reconnaissance techniques are identical to normal reconnaissance, selection, and occupation of position procedures. The process can be portrayed graphically as shown in figure 2.

If the battalion is to occupy a tactical assembly area prior to commitment to battle, the procedure after arriving at the release point is different. This point in this instance is referred to as the forward laager area and is occupied much the same way as the rendezvous point. The commander selects this position based on his helicopter or map reconnaissance and attempts to choose a suitable location 3 to 5 kilometers from the tactical assembly area site. The commander designates the tentative site during the briefing in the rendezvous point and the actual site by stepping out of his jeep and unhooking his trailer. Battery reconnaissance parties spread out in a fashion identical to that used in the initial rendezvous; commanders drop their trailers and return to the supporting road or just off of it to avoid bunching up. Once the battalion commander sees that all the battery commanders have returned to the vicinity of the road, he heads out towards the tactical assembly area. The senior noncommissioned officer at the tactical operations center remains in charge of the laager and supervises its setup and establishment of local security.

Thus, the tactical assembly area reconnaissance party is a series of seven jeeps without trailers. It reconnoiters by driving on all of the available roads and trails through the assembly area and slightly beyond. The purpose of the reconnaissance is to determine the size, road network, terrain features, available cover and concealment, escape and access routes, drainage patterns, and areas of greatest probable threat. The reconnaisance party should:

- First, travel the outer limits of the usable assembly area and identify potential escape and enemy approach routes.

- Second, take either the north-south or east-west axis and travel on all available roads or trails to determine where they go.

- Third, travel over roads and trails along the axis not previously used.

When the battalion commander feels that he knows the layout of the tactical assembly area, he stops at a central location. The other jeeps park around the commander's jeep, as they did in the rendezvous point. The battery commanders, first sergeants, and battalion commander make a rough sketch on the ground depicting the major terrain features and road network of the assembly area. The purpose of this sketch is twofold: to check with all participants to verify the location of key features and to assign areas of responsibility.

The TAA is habitually set up like an inverted "U." Each commander is given the start, end, and tie-in locations for his unit. Once general locations are given for each element, the respective commanders go to the tie-in points together and confirm on the ground where one unit stops and the other starts and how they will ensure that no gaps are created in observation or listening post coverage. Then each team does a quick survey of its sector for general locations. This is normally linear for the line batteries due to their small size and the large area which they must cover.

With the general locations determined, the commanders return to the forward laager area and pick up their reconnaissance parties. The time from dispersal into the forward laager area until the battery commanders return should be approximately 1½ hours. Each battery reconnaissance party then moves to its assigned area and specifies each weapon and vehicle position. Because these are direct fire positions, they are located away from clearings to avoid detection by passing aircraft. The battery wire teams lay internal wire and a line to the battalion message center to provide wire communications. Radios are on listening silence in the tactical assembly area.

At the completion of the preparations, the battery commander sends an intercept vehicle to the designated release point to pick up his unit as it closes on the forward area. Contact is made by sight, not radio, and the battery is led in to the assembly area position.

By the time the battery's main body vehicles arrive, they will have gone through an "ESSO station" for refueling and ammunition resupply en route. This location, which is determined by the battalion executive officer based on information provided during the warning order, will be somewhere along the route the batteries follow.

With the closure of the final vehicles of the battalion's ESSO station complex which fell in at the end of the convoy, the battalion movement is complete. The mission is accomplished and the orders group has done its job with the efficiency and effectiveness of a well-drilled organization.

Lieutenant Colonel Floyd V. Churchill, Jr., FA, a frequent contributor to the *Journal,* is assigned to Deputy Chief of Staff for Operations and Plans, War Plans, Department of the Army Staff, Washington, D.C. He received his commission through the Citadel in Charleston, SC, where he was a distinguished military graduate. He has served as commander of the 5th Battalion, 8th Field Artillery, C3 operations officer for the Combined Field Army, Korea, and executive officer for the 18th Field Artillery Brigade (Airborne).

View from the Blockhouse

FROM THE SCHOOL

M198-Haste Makes Waste

It could cost your unit over $11,000 in repair parts alone if the members of one of your M198 crews are careless when preparing their howitzer for towing. Failing to engage the top carriage locking pin may well result in extensive damage to all four of the expensive components listed below.

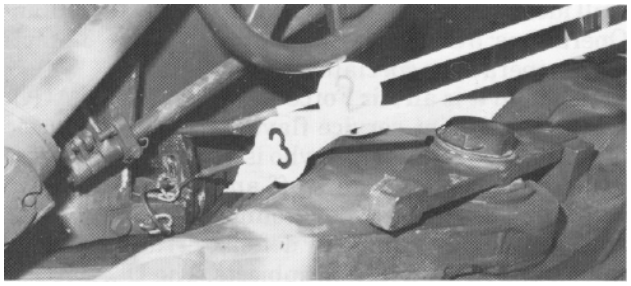
Travel Lock Assembly	$517
Traverse Angle Drive Unit	$6,248
Eccentric Adjusting Ring	$393
Internal Gear	$4,127

The travel lock assembly can also be damaged if a gun crew uses only one of the lower travel lock pins to secure it to the bottom carriage. Both lower travel lock pins must be properly engaged to tow the howitzer safely.

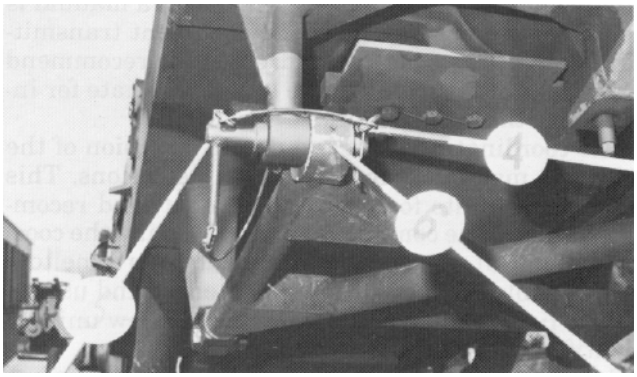
Besides the cost involved, you might also find your howitzer deadlined for a considerable period waiting for these parts to arrive. The travel lock assembly, traverse angle drive unit, and eccentric adjusting ring are all at zero balance in the supply system; and the internal gear is approaching zero balance. This situation is not expected to improve significantly for 18 months.

To keep your M198 healthy and you happy, it is imperative that you follow the proper procedures for preparing the howitzer for towing. These procedures start on page 2-99 of TM 9-1025-211-10 C4. Just in case you don't have a copy of the manual handy, the following sequence of photographs outlines that portion of the procedure that deals with the top carriage locking pin and the lower travel lock pins. After the chief of section has ensured that there is no ammunition in the cannon tube, and the muzzle plug is in place (Steps 1 and 2), he should make certain that his crew applies the following procedures. The specific step numbers coincide with those found in the technical manual.

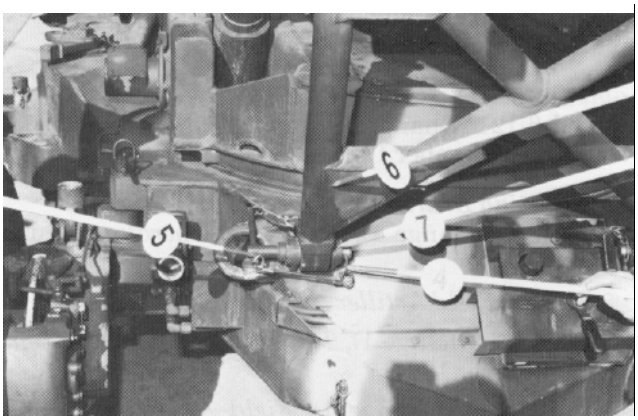
Step 3: The gunner and assistant gunner position the cannon tube in the center of traverse and set the cannon tube at 250 mils.



Step 4: The gunner engages the top carriage locking pin (2) by removing the retaining pin (3) and pushing down on the top carriage locking pin. The gunner then inserts the retaining pin to secure the top carriage locking pin.



Step 5: Cannoneers no. 3 and 4 remove the retaining pins (4), travel lock pins (5), and lower travel lock assembly (6).



Step 6: The gunner raises or lowers the cannon tube until the travel lock assembly (6) is aligned in brackets (7). Cannoneers no. 3 and 4 then insert the travel lock pins (5) and retaining pins (4).

Photos by SP4 Dave Williams

Following these very simple procedures can save you a considerable amount of money and can keep your M198 operational.

Updating Doctrine

Recent visits by Fort Sill action officers to units in US Army Europe and the Continental United States reveal that increased emphasis is being placed on developing new and better ways to accomplish the mission. Unfortunately, the potential for even greater progress has been partially undercut because units rarely share their ideas with other organizations. Redlegs everywhere need to recognize that new methods and ideas benefit the Field Artillery Community best when they are communicated to the widest possible audience.

The doctrinal literature cycle provides a means for accomplishing this widespread transmission of ideas and methods. Opportunities occur during the topic

outline stage and again when the coordinating draft (distributed as a field circular) reaches units for their review and comment. The topic outline is a warning order sent to the field to alert units that a manual is being revised or rewritten. The document transmitting the outline asks the addressees to recommend additional topics they believe are appropriate for inclusion in the final manual.

The coordinating draft is a detailed version of the proposed manual to include key illustrations. This too reaches units for review, comment, and recommendations. The comments received during the coordinating draft phase of development determine to a considerable degree the appropriateness and usefulness of field manuals. Such comments allow units to identify "a better way."

Several topic outlines and coordinating drafts are scheduled for distribution during the next 90 days. You can expect to see them during the month shown in parentheses. Take advantage of these opportunities to share your good ideas.

Topic Outline:

• FM 6-121 (Change 1), *Field Artillery Target Acquisition* (September 1985)

Coordinating Draft Field Circulars:

• FM 6-1 (Change 1), *TACFIRE Operations* (July 1985)

• FM 6-2, *Field Artillery Survey* (August 1985)

• FM 6-11 (Change 1), *The Pershing II Firing Battery* (September 1985)

• FM 6-20-1 (Change 1), *Field Artillery Cannon Battalion* (June 1985)

• FM 6-20-2 (Change 1), *Division Artillery, Field Artillery Brigade, and Field Artillery Section* (Corps) (September 1985)

• FM 6-40-4, *Field Artillery Lance Missile Gunnery* (June 1985)

• FM 6-42 (Change 1), *Field Artillery Battalion, Lance* (September 1985)

Two field circulars on the multiple launch rocket system have been developed and are being made available to units. The first one, FC 6-60, *Multiple Launch Rocket System Operations*, was mailed out in March along with a cover letter requesting careful review and field-testing. FC 6-60-2, *Multiple Launch Rocket System Battalion Operations* followed in May. Comments and ideas received following the review and field-testing of these field circulars will be the basis for the developing FM 6-60, *Multiple Launch Rocket System Operations,* scheduled to begin production in March 1986.

In March, FM 6-20, *Fire Support in Combined Arms Operations,* began arriving in units. This is an excellent "how-to" manual. Of course, recommendations on how to make it even better are always welcome.

Anyone with questions or comments regarding doctrinal issues should contact the School's Directorate of Training and Doctrine by calling AUTOVON 639-4225/4240 or writing to:

Department of the Army
Commandant
US Army Field Artillery School
ATTN: ATSF-DD
Fort Sill, OK 73503-5600

Training for the AirLand Battle

"AirLand Battle" is a phrase heard from platoon to corps levels. Instructors at each Army school define, explain, and expand the concept of the AirLand Battle. Virtually every branch magazine has published articles detailing how that particular branch will fight and function in the context of the AirLand Battle. Each of these articles appears to have a common thread: If we are going to win the battle it is absolutely necessary for all of the services—Army, Navy, Air Force, and Marine Corps—to function as a team. Therefore, Army personnel need to understand their sister services' functions, organizations, and capabilities and need to know how to integrate the many components of the joint operations team. Other than on-the-job training and the various staff colleges, where does one go to receive training in joint operations?

The United States Air Force Air-Ground Operations School (USAFAGOS), located at Hurlburt Field, Florida, near Fort Walton Beach, is the focal point for joint training in tactical air-ground operations. It is the only school that is authorized to train Army officers and enlisted members for award of the additional skill identifiers (ASI) that pertain directly to AirLand Operations: 5U—air operations officer and Q8—tactical air operations specialist.

Although it is an Air Force school, the USAFAGOS has a strong joint service flavor. The US Army element, headed by a colonel who is also the deputy commandant, includes nine staff and faculty members who provide instruction in ground operations, intelligence, communications, air defense artillery, field artillery, and Army aviation subjects. The USAFAGOS faculty also includes US Navy and Marine Corps personnel who serve as advisors to the commandant and present the Navy and Marine Corps portions of the curriculum.

USAFAGOS is charged with training personnel in the doctrine, tactics, techniques, and procedures by which air and surface combat forces plan, integrate, and conduct joint operations. To accomplish this, the USAFAGOS conducts two courses: the battle staff course (BSC) and the joint firepower control course (JFCC). These courses cover a wide range of topics concerning joint operations. Specifically, they deal with the concepts, procedures, and techniques of combat operations as well as the battle management decision processes used by component and joint force commanders.

Battle Staff Course

The battle staff course is a 3-week course which provides a fundamental understanding of tactical battle management within the US Air Force tactical air control system (TACS) and the Army air-ground system (AAGS) and the principles of maximizing Air Force and Army capabilities in the AirLand Battle. Emphasis is on the planning and management of theater air and land resources, the systems and procedures used to control joint forces, and the coordination required to support decision making. The battle staff course focuses at Army division and Air Force air support operations center (ASOC) levels and higher.

The academic phase of the course covers the Threat, tactical air operations, ground forces employment concepts, weapon systems, sortie generation potential, weapon effectiveness, logistics and communications support considerations; command, control, and communications countermeasures (C^3CM); and command, control, and communications intelligence (C^3I) systems and procedures. The course culminates with a "hands-on" command post exercise in which Army and Air Force students participate as battle staff members. Army officers who complete the course receive the ASI 5U (air operations officer). Five battle staff courses are normally conducted annually.

The course is designed for field grade active duty and reserve component commissioned officers who are assigned, or scheduled for assignment, to any position requiring an understanding of the air-ground system at higher levels. Examples of soldiers who should attend are G3s and G2s as well as their assistants such as G3 Air; tactical surveillance officers; fire support coordinators; members of battlefield coordination elements, air defense command posts, and aerial reconnaissance and surveillance units; all liaison personnel with tactical fighter and reconnaissance units, control and reporting centers, and tactical air control centers; and other personnel whose duties involve air-ground operations. Additionally, service school instructors who are involved in teaching subjects requiring an understanding of the air-ground system should attend the battle staff course as a part of their initial instructor training.

Joint Firepower Control Course

The joint firepower control course is also taught to a joint Army and Air Force student body. The emphasis in this course is on the control systems and equipment employed in the joint application of firepower in support of ground operations. This training is designed for Air Force officers who will provide support to Army maneuver units at the division level and below as forward air controllers or air liaison officers and for Army officers and NCOs who hold positions in the Army air-ground system at the brigade level and below. The course teaches jointly approved concepts, procedures, and techniques of combat operations and the coordination and control systems involved in the air-ground operations system. Students concentrate on planning and coordination within the tactical air control system and Army air-ground system at brigade and battalion levels. Army students attend the first 2 weeks of the 3-week course that trains US Air Force personnel being assigned to tactical air control parties and tactical air support squadrons.

Army officers are awarded ASI 5U (air operations officer) upon successful completion of the joint firepower control course. NCO graduates are awarded an ASI Q8 (tactical air operations specialist). Ten courses are normally conducted each year.

This course is designed to train active Army or Reserve Component commissioned officers and noncommissioned officers in grades E5 and above who are assigned or programed for assignment to brigade level or below in any position requiring an understanding of the air-ground operations system. Personnel assigned as S3, S3 air, fire support coordinator, fire support officer, fire support team chief or sergeant, S2, assistant S2, forward observer or operations NCOs at all levels are appropriate candidates. Advisors to Reserve Components and other personnel whose duties involve air-ground operations will also benefit from the course.

Nonresident Instruction

The USAFAGOS can provide on-site instruction to Army Active and Reserve Component units and to designated service schools. Such instruction is not a substitute for the resident courses nor does it fulfill attendance requirements of Army and Air Force personnel. The purpose of nonresident instruction (NRI) is to respond to unique operational requirements.

Requests for nonresident instruction should be made to USAFAGOS/ED, Hurlburt Field, Florida, 32544. All requests should be submitted at least 45 days prior to the date of desired instruction and include the following information:

- Instruction topics or unique information requirements.

• Justification including an explanation of how the presentation will benefit the prospective audience and why scheduled courses cannot be used.

• The date of the desired instruction and proposed alternate dates.

• Approximate size and composition of audience.

• Name and telephone number of the project officer.

The Commandant, USAFAGOS, approves requests for nonresident instruction on a case-by-case basis. Upon approval, instructional facilities and equipment are coordinated. If desired, the instructor team can administer an examination and provide results to the commander of the requesting unit.

Time permitting, a period should be set aside during nonresident instruction to permit USAFAGOS personnel to meet informally with appropriate members of the unit or headquarters for the purpose of faculty enrichment.

How to Attend AGOS

USAFAGOS courses are listed in the Army formal schools catalog, DA Pamphlet 351-4, as 2G-F36 (BSC) and 2G-F37/250-F11 (JFCC). Army quotas are controlled by the Deputy Chief of Staff, Training, USATRADOC, Fort Monroe, Virginia, (ATTG-MPS, AUTOVON 680-2161; commercial (804)727-2161). Quotas are suballocated by the US Army Training and Doctrine Command as follows: Active Army, US Army Military Personnel Center (MILPERCEN) AUTOVON 221-8100; Army National Guard, National Guard Bureau, AUTOVON 584-4789; US Army Reserve, US Army Forces Command (FORSCOM), AUTOVON 558-2175. Requests for assistance should be processed through unit training personnel. Additional information or assistance can be obtained by calling the USAFAGOS Army Element at AUTOVON 872-6889/6655 or commercial (904)884-6889/6655.

Department of the Army assignment officers may also determine attendance eligibility for active duty officers and enlisted personnel being assigned to units which have identified requirements for ASIs 5U and Q8. Consequently, units should ensure requisitions for respective personnel include additional skill identifier requirements. Remember that USAFAGOS consolidates the doctrine, tactics, techniques, and procedures of all the services to train individuals and units to fight and win on the AirLand Battlefield.

Personnel occupying the duty positions listed below should be trained in air-ground operations:

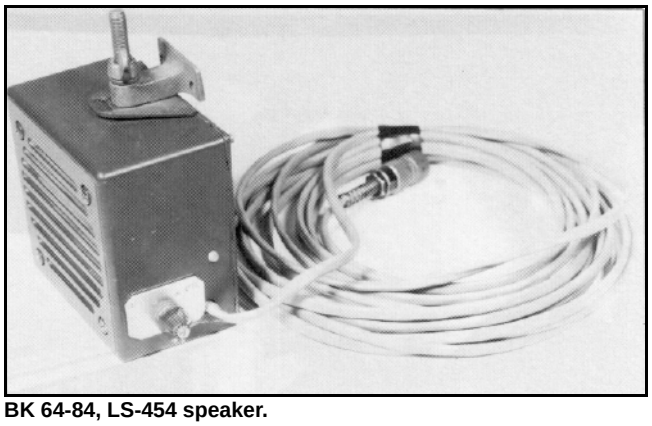
	Organization level				Appropriate Course	
Duty position	Corps	Div	Maneuver Brigade	Maneuver Battalion	JFCC	BSC
G3/S3		X	X	X		X
G3 air/asst G3 air	X	X				X
Tactical surv officer and asst	X					X
S3 air/S3 air opns NCO			X	X	X	
G3 air opns NCO	X	X			X	
G3 plans	X	X				X
G4 plans/airlift	X	X				X
Fire support coord/asst	X	X				X
Fire support officer/NCO			X	X	X	
FIST LT/NCO				X	X	
FA bn S3	X	X				X
Aerial observer/FA bn asst S3	X	X			X	
FA bn FSE/Opns NCO	X	X			X	
COSCOM G3/G4	X	X				
DISCOM S3						X
DISCOM Asst S3/S4	X				X	
Avn bn S3	X	X				X
Avn bn opns off/NCO	X	X			X	
C/V bn S3		X				X
C/V asst S3 (DAME)		X				X
ADA airspace mgmt off	X	X				X
ADA airspace mgmt NCO	X	X			X	X
Avn opns officer (DAME CAME)	X	X				X
S2/asst S2/intel NCO			X	X	X	
Airlift plan off	X	X				X
Sig bn S3/asst	X	X			X	X
Avn officer	X	X				X
Rear area opns off	X					X
G2/asst G2/G2 opns	X	X				X
S2/BICC chief			X	X		X
MI bn S3, chief CM&D, IPS, TCAE, EWS	X	X				X
MI TOC support element	X	X				X

BATTLEKING Projects

BATTLEKING is alive and well. On 8 March we published the third issue of the BATTLEKING newsletter. It contained reports on 27 separate proposals. We are also putting together a BATTLEKING video tape for distribution to the field showing some of our exotic and useful projects. In conjunction with the theme of this *Journal* issue, here are some BATTLEKING projects that affect *our* techniques.

Turn Your Radio On

• *BK 64-84, LS-454 Speaker as a Radio Remote (Source: Major Barfield, US Army Field Artillery Board.)* Field artillery command posts must be able to operate in one of three different configurations: inside the command post vehicles, in a track extension or tent, or in a building near the command post. In most cases the AN/GRA-39 must be remoted less than 50 feet. For these short distances it may be possible to construct a remote device that does not use any batteries. The concomitant dollar savings could be substantial, and battery stockage requirements, especially in tactical units, would be eased. An LS-454 auxiliary speaker can be modified with a five-pin connector to use with a handset and a speaker volume control in order to make a remote device. A cable can be made to span the short distance required. The idea

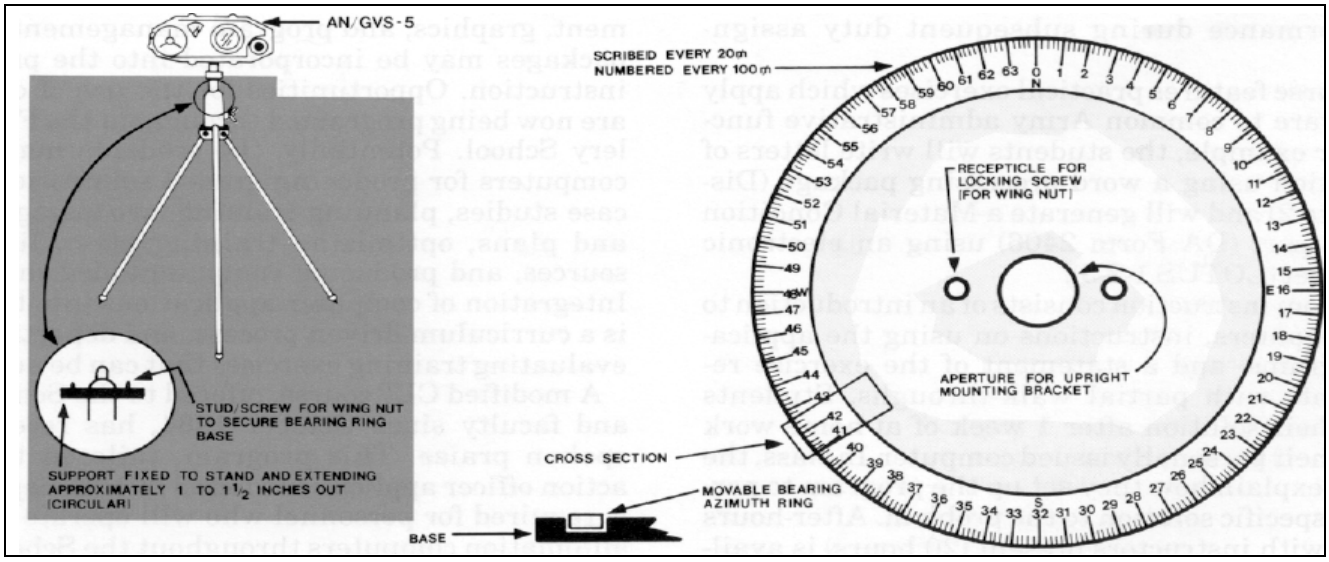


BK 64-84, LS-454 speaker.

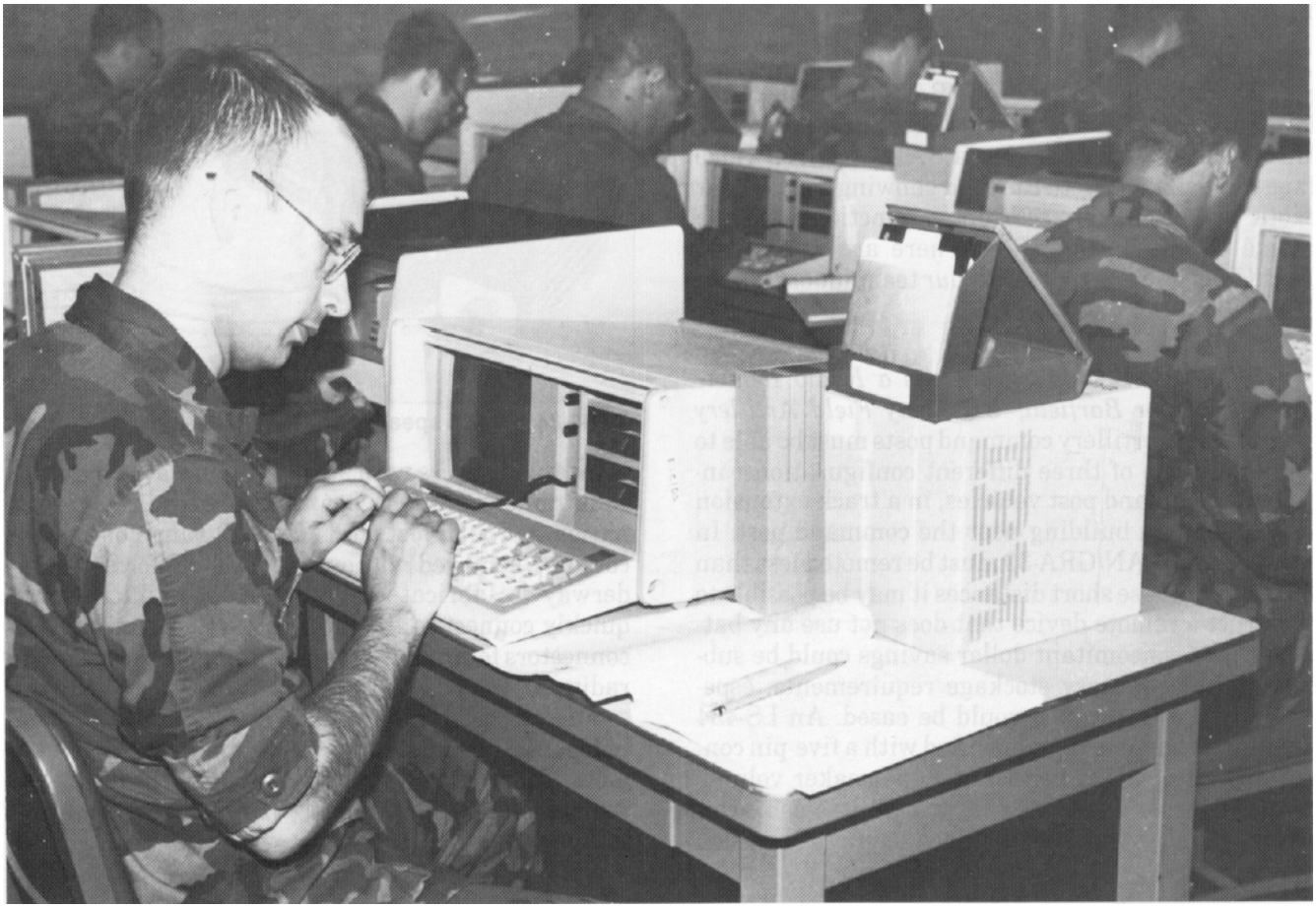
is to provide users with an easily fabricated, low-cost radio remote. The test speaker used in the initial evaluation had a 35-foot cord. The full range of volume could be achieved without feedback. Efforts are underway to fabricate a "control box" which would quickly connect to the intercom system and provide connectors for unmuted radio output for three or four radios. Using the "control box" a listener inside the command post vehicle could adjust the radio volume independently of the listener using the LS-454 remote. Communications and Electronics Division, US Army Field Artillery School (USAFAS), is evaluating this proposal.

New Stability for Tripod

• *BK 43-84, Light Gun Tripod (Source: Major D. A. Lockridge, Canadian Liaison Officer, Fort Sill, OK.)* This proposal is an enhancement of BATTLEKING evaluation SW 34-83, bipod for the laser target designator. The evaluation results of SW 34-83 were reported in *BATTLEKING Update Volume 1*. The proposal is to add a circular mounting plate to the tripod which would secure an AN/GVS-5 laser rangefinder and provide stability for a detachable bearing ring base. The base would have an adjustable slip scale graduated in mils. The modification would allow the observer to orient the AN/GVS-5 on a known bearing to an accuracy of plus or minus 20 mils. Data to multiple targets or adjustment points could then be produced on a "common grid." The common error would be "shot in" on the adjustment of one target or registration point enabling fire for effect on the remaining targets without further adjustment procedures. The Gunnery Department, USAFAS, is evaluating this proposal.



BK 43-84, light gun tripod.



Field artillery officers train on new software programs to enhance job performance.

Computer Literacy Training

As part of the Field Artillery Officer Advanced Course, students now receive computer literacy training (CLT). The overall objective of the CLT course is to teach the field artillery officers to function in a computer-aided environment. The goal is functional proficiency with application software to assist them in job performance during subsequent duty assignments.

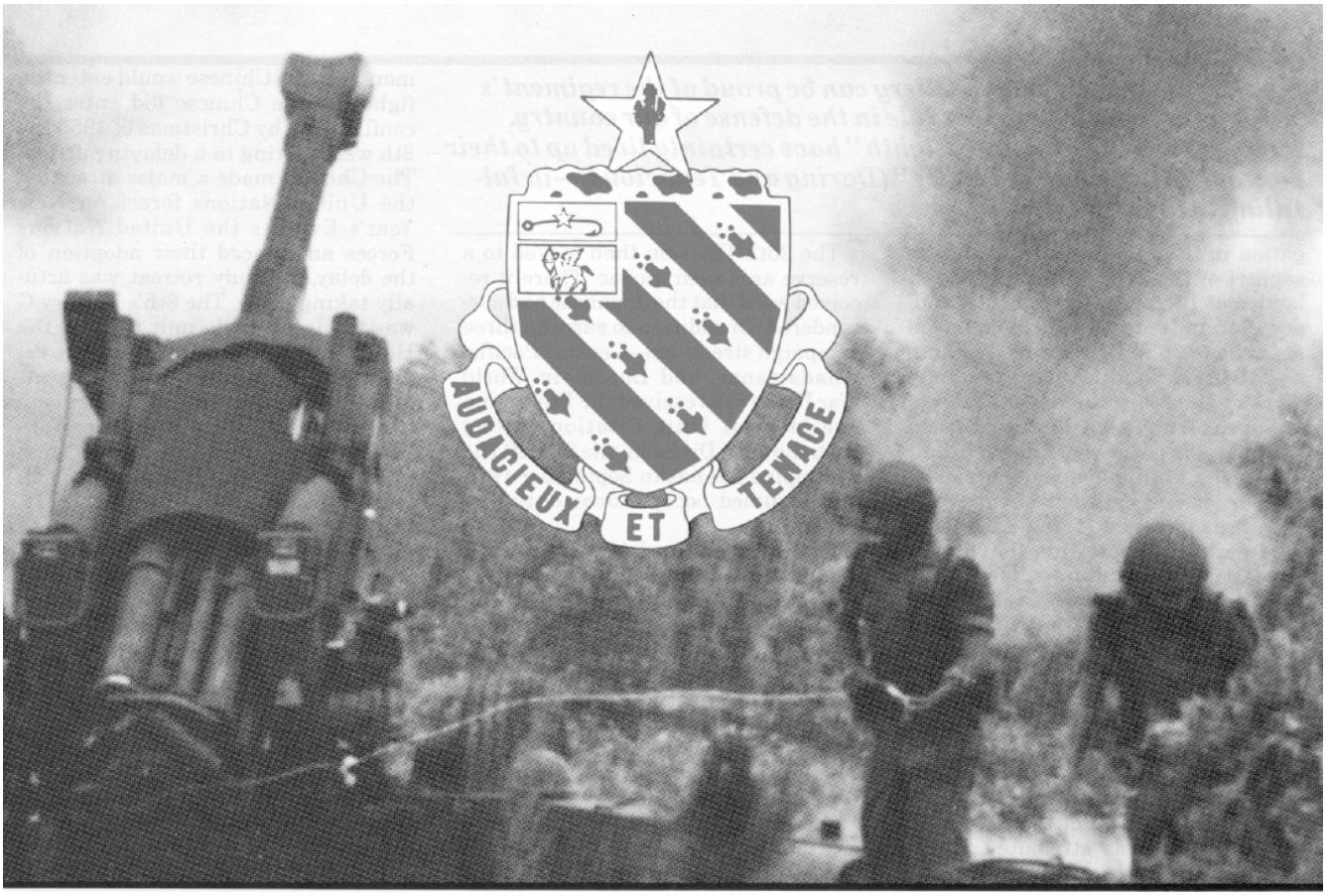
The course features practical exercises which apply the software to common Army administrative functions. For example, the students will write letters of appreciation using a word processing package (Display Write 2) and will generate a Material Condition Status Report (DA Form 2406) using an electronic spreadsheet (LOTUS 1-2-3).

Classroom instruction consists of an introduction to using computers, instructions on using the application programs, and a statement of the exercise requirements with partial walk-throughs. Students submit their solution after 1 week of at-home work time on their personally issued computer. In class, the students explain how they set up the program to perform the specific solution to the problem. After-hours lab time with instructors present (20 hours) is available to students who require extra assistance.

The course also includes instruction on design of systems and the automated administrative information systems currently in use in the Army (SIDPERS, SAILS, DS4, TMACS, etc.).

The 16 periods of computer training time is intended to be an introduction only. The potential for student application is almost unlimited. As time allows, practical exercises using data-base management, graphics, and program management software packages may be incorporated into the program of instruction. Opportunities for the use of computers are now being programed throughout the Field Artillery School. Potentially, the students may use the computers for producing graded submissions, doing case studies, planning training, producing forecasts and plans, optimizing training given limited resources, and producing computer-aided instruction. Integration of computer applications into the course is a curriculum-driven process, and departments are evaluating training exercises that can be automated.

A modified CLT course, offered to the School's staff and faculty since October 1984, has received outspoken praise. This program, tailored to typical action officer applications found in each department, is required for personnel who will operate the office automation computers throughout the School. (Carolyn Newell, Data Systems Office, USAFAS.)



The Automatic Eighth by Major James R. Lani

The 8th Field Artillery was formed during America's mobilization for World War I. It was constituted in the Regular Army on 1 July 1916 and organized later that month at Fort Bliss, Texas, with soldiers from the 5th and 6th Field Artilleries. The regiment initially consisted of the 1st and 2d Battalions. The 1st and 2d Battalions each consisted of a headquarters and headquarters battery, as well as Batteries A through C, and Batteries D through F, respectively. These batteries are the parent units of the eight battalions of today's 8th Field Artillery. The 1st Battalion's Battery A is currently the 1st Battalion; Battery B is the 2d Battalion; Battery C is today's 3d Battalion; Battery D is the Army Reserve's 4th Battalion; Battery E is the 5th Battalion; Battery F is the 6th Battalion; the original 1st Battalion's headquarters and headquarters battery is the 7th Battalion; and the original 2d Battalion's headquarters and headquarters battery is the 8th Battalion.

During mobilization for World War I, the regiment was assigned to the 7th Division in December 1917. As the general support artillery regiment of the division, the 8th deployed to Europe with 155-mm howitzers. After landing in France in August 1918, the 7th Division (less divisional artillery) joined the United States' Second Army in October. The division's artillery arrived at the front in mid-November after receiving additional training in Brittany. Although they were too late to participate in combat, the 8th earned a World War I streamer for serving in a war theater.

The 8th returned to the United States in June 1919 with the 7th Division and was stationed at Camp Funston, Kansas. On 1 March 1921, the regiment was relieved from duty with the 7th Division and assigned to the Hawaiian Division as part of the division's 11th Field Artillery Brigade. On 1 October 1941, the regiment was reorganized and redesignated the 8th Field Artillery Battalion and assigned to the 25th Infantry Division. The 8th was in Hawaii when the Japanese attacked Pearl Harbor. It assisted in the clean-up of Pearl Harbor and began preparing for war in the Pacific Theater.

The Redlegs of the 8th Field Artillery Battalion deployed in November of 1942 with the 25th Infantry Division to Guadalcanal where the 1st Marine Division and the Americal Division had engaged the Japanese. The 8th landed on friendly beaches on 20 December 1942 to support the 27th Infantry "Wolfhounds." One notable achievement during the 8th's participation in this fight was a 33-minute time-on-target fire mission on 9 January 1943. The 8th supported the 25th Infantry Division throughout heavy combat during the first half of 1943, particularly at Galloping Horse, Snake Hill, and Kokumbonu. After these operations, the units occupied defensive positions from July through October.

The 27th Infantry and the 8th Field Artillery Battalion moved to New Zealand in November 1943, remained there for 3 months, and then moved to New Caledonia for 9 months. The time in New Zealand and New Caledonia was used to train the units for participation

Soldiers of the 8th Field Artillery can be proud of the regiment's heritage and its fire support role in the defense of our country. Redlegs of the "Automatic Eighth" have certainly lived up to their motto—"Audacieux et Tenace" (Daring and Tenacious)—in fulfilling their mission.

in the Philippine campaign in support of the 27th Infantry. The 8th landed at Lingayen Gulf on 11 January 1945 and entered combat on Luzon near the town of Ureneta on 17 January 1945. A significant accomplishment by the 8th occurred on 17 January in an all night battle which turned out to be one of the more decisive battles in the Philippine campaign. The 8th burned or crippled 28 enemy vehicles, 8 enemy tanks, and 12 enemy field artillery pieces. After that battle, the Japanese began to withdraw into the Carabello Mountains and offered only delaying actions until the campaign ended on 10 February.

The 8th continued its support of the 27th Infantry and on 21 March provided a classic example of effective fire support in the defensive. The Japanese attacked the 27th's 2d Battalion in the Myoko Mountains, but they were repelled. Much of the success of this operation was attributed to the outstanding fire support provided by the 8th which had clerks, cooks, and wiremen joining the gun crews to ward off the Japanese. In an hour-and-a-half, the 8th fired more than 1,100 rounds.

Photo courtesy Fort Ord Public Affairs Office

Preparing to fire; fuzing 155 HE rounds.

The 25th Division then moved to a reserve area near Tarlac. There it received word that the Japanese had surrendered. In addition to earning three campaign streamers—Central Pacific, Guadalcanal, and Luzon—in World War II, the 8th received the Philippine Presidential Unit Citation. Along with the 25th Division, the 8th left the Philippine Islands in September 1945 and assumed occupational duties in Japan.

The 8th remained in Japan until 1950 and the outbreak of the Korean War. Prior to deploying to Korea, the 8th was understrength; so Battery C was split in order to bring Batteries A and B up to the strength required to make them effective fighting units. The 8th deployed to Korea on 7 July 1950 and landed in Pusan on 11 July. The Redlegs saw their first action in Korea near Yongdong between Taejon and Taegu.

Although the 8th's soldiers were inexperienced and were only 2 weeks removed from occupational duties in Japan, North Korean prisoners of war wanted to see those "new automatic artillery weapons" as they passed through Battery B's position en route to the rear. This inquiry was the origin of the 8th's nickname, the "Automatic Eighth." The Redlegs had already adopted the motto, "Daring and Tenacious," and their fire support in Korea had proved them worthy of the slogan.

The 8th continued to excel in Korea and along with the 27th Infantry formed the famous "Fire Brigade." One of the more memorable missions given to the Fire Brigade was to protect the Eighth Army Headquarters in August 1950. During the period 21-24 August, the Fire Brigade defended an area near Taegu called the Bowling Alley where more than 3,000 enemy soldiers were killed; the Automatic Eighth's guns contributed significantly to the successful defense of the area. The outstanding fire support from the battalion was provided by only two batteries. Battery C was filled on 27 August by men from the 10th Provisional Artillery Battery which had arrived from Camp Carson, Colorado.

As the conflict continued, the 8th played a vital role in providing fire support while the United Nations forces pushed the enemy north. During this period there were frequent rumors that the Chinese would enter the fighting. The Chinese did enter the conflict, and by Christmas of 1950 the 8th was fighting in a delaying action. The Chinese made a major attack on the United Nations forces on New Year's Eve. As the United Nations Forces announced their adoption of the delay, a steady retreat was actually taking place. The 8th's Battery C was the last mobile unit to cross the Han River before the bridges were demolished. Battery C was then attached to the 27th Infantry and given the mission of supporting the Wolfhounds' withdrawal.

The effectiveness of the enemy's offensive ended in early January 1951, and the 8th began to move forward along with the other United Nations forces. For a while the 8th's activity consisted of moving forward each morning to fire and moving back at night to more protected positions. Eventually, the Redlegs moved to the Iron Triangle near Kumhwa to support the Wolfhounds of the 27th.

Truce talks began in earnest, and combat action decreased. Peace was eventually achieved, but by the time the cease-fire occurred, the daring and tenacious 8th had fired 499,403 rounds of ammunition against the enemy.

The half millionth round fired in Korea by the 8th occurred during a routine service practice at Bullseye Range on 22 November 1953. After the cease-fire, the Automatic Eighth changed from a unit fighting a war to a unit preparing for war. The 8th's distinguished actions in Korea were similar to those during World War II, in support of the 25th Infantry Division's 27th Regimental Combat Team, except that in Korea the 8th was in almost constant contact with the enemy. It participated in all 10 campaigns of the conflict, won two Army Presidential Unit Citations, a Navy Presidential Unit Citation and Commendation, and two Republic of Korea Presidential Unit Citations.

Assigned to the 25th Infantry Division, the Automatic Eighth departed Korea for Hawaii in September 1954. On 1 February 1957, the 8th was reorganized as a Combat Arms Regimental System (CARS) parent regiment and was redesignated the 8th Artillery. The 1st Battalion remained assigned to the 25th Infantry Division. Battery A, as mentioned earlier, served as the original unit of the 1st Battalion. Battery B, which served as the base for the formation of the 2d Howitzer Battalion (105-mm), 8th Artillery, was assigned to the 7th Infantry Division and was activated 1 July

1957 in Korea. The other units of the 8th Artillery were inactivated.

During the military buildup for the Vietnam Conflict, the 7th Battalion was activated and along with the 1st Battalion formed the 8th's organizations that participated in the fighting. The 1st Battalion deployed to Vietnam with the 25th Infantry Division's 2d Brigade in January 1966 and remained there until 1971. The 7th Battalion was activated on 23 August 1962 at Fort Chaffee, Arkansas, and served in Vietnam as part of the 54th Artillery Group from June 1967 until October 1969. It then served with the II Field Force Artillery until May 1971 and with the 23d Artillery Group prior to departing for Fort Lewis, Washington, and inactivation. The 1st and 7th Battalions added to the 8th's outstanding war record by earning 13 Vietnam battle honors.

The 8th was redesignated the 8th Field Artillery in September 1971. In October 1983, the 8th Field Artillery was placed under the United States Army Regimental System. The colors of seven of the battalions are active in the Regular Army and one battalion is active in the Army Reserve. Together, the battalions compose the largest field artillery regiment. The regimental home base is with the 1st Battalion located at Schofield Barracks, Hawaii—just one of the exciting and diverse locations where gunners of the Automatic Eighth can serve. The battalions do not rotate from the Continental United States to overseas, but artillerymen of the regiment can serve in Korea; Fort Bragg, North Carolina; Fort Ord, California; and Hawaii.

Five of the battalions employ the Army's 155-mm M198 howitzer, and two

The 3-8 Field Artillery in the Egyptian desert. Photo by LTC Arturo Rodrigue

are using the 105-mm howitzer in support of the Army's new light infantry divisions. The Automatic Eighth primarily supports the infantry with five of its battalions in direct support roles to infantry divisions. The 1st and the 7th Battalions are in direct support roles in the 25th Infantry Division in Hawaii. The 2d and 6th Battalions are assigned as direct support battalions in the 7th Infantry Division at Fort Ord, California. The 3d and 5th Battalions are corps units, assigned to the XVIII Airborne Corps Artillery at Fort Bragg, North Carolina. The 4th Battalion is part of the Army Reserve and is assigned to give direct support to the 157th Infantry Brigade. The 8th Battalion is a direct support battalion in the 2d Infantry Division in Korea.

The 8th Regiment continues its "Daring and Tenacious" fire support in the current army structure with

Photo by CPT David R. Dull

Soldiers of 3-8 Field Artillery set up a firing point at Fort Bragg.

towed artillery. Gunners assigned to the 8th Field Artillery Regiment can be proud of its history as they serve in units that are vitally important to the preservation of peace.

Major James R. Lanier, FA, received his commission through ROTC at North Carolina A and T State University where he received a bachelor of science degree. He obtained his master's degree from The Catholic University of America in Washington, DC, and graduated from the Command and General Staff College. He has served with the 82d Airborne Division as a battery commander and a reconnaissance and survey officer. He also commanded the United States Army Detachment, IZMIR, in Turkey and was adjutant of the 18th Field Artillery Brigade. He is currently the executive officer of the 3d Battalion, 8th Field Artillery Regiment at Fort Bragg, North Carolina.

Korean Capers:

Tactics for Exploiting the Terrain

by Major M. Thomas Davis

There is no single item that influences military actions as profoundly as the nature of the terrain in an area of operations. It is this essential element that more than any other dictates the basic nature of military decisions in both the strategic and tactical dimensions of warfare.

On the strategic level, the nature of the terrain in a potential area of conflict will determine to a large extent whether the application of military force is suitable for the pursuit of national policy. If it is, then a strategic evaluation of the terrain will determine the types of forces that ought to be deployed as well as the scale of the support effort required to maintain them in the field.

On the tactical level, where most soldiers focus their interest, the makeup of the terrain will guide the commander in determining ways of tailoring his force as well as in deciding the basic tactics to be used during its employment.

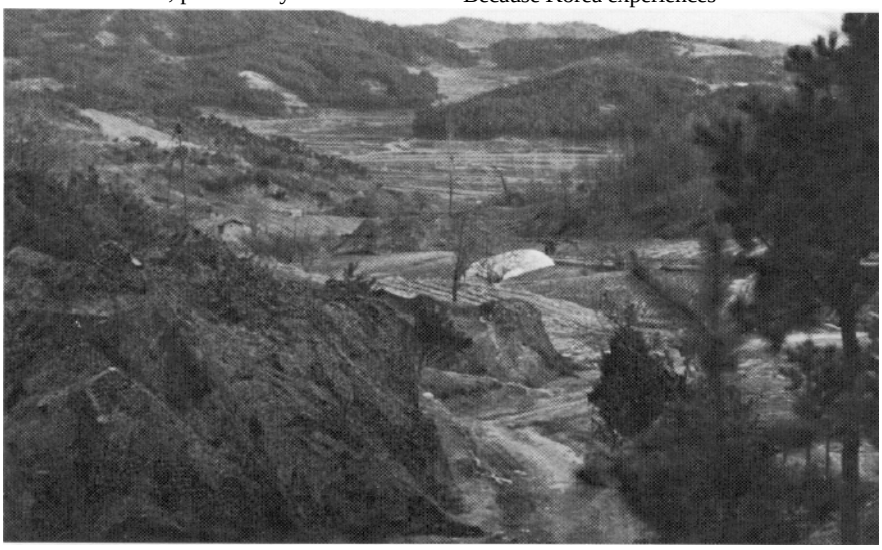
Of all the operational environments currently occupied by large-sized, conventional American forces, none contains terrain as tactically challenging as that of Korea. The unique nature of the Korean topography creates difficulties for all military units, but particular problems exist in the employment of field artillery.

The Korean peninsula is very rugged and mountainous, particularly in the areas north of the capital city of Seoul which serve as the main areas of operation for the 2d Infantry Division. Several mountain chains running in a north-south direction toward Seoul divide the terrain into very distinct compartments.

To the west lies the relatively flat area known to American soldiers as the "Western Corridor." In the interior to the immediate east lies a series of valleys separated by very prominent mountains. These compartments comprise the entire maneuver space available to military units operating north of Seoul. For three reasons, these compartments are very difficult spaces indeed.

First, the valleys are very distinct. The road network in the area runs predominantly in a north-south direction making lateral movement through cross-compartments very limited. For operational planners, this means that once a unit has occupied one of these enclosed valleys, it is difficult to leave without considerable effort.

Second, the road network varies greatly in quality. Through some of the major valleys the roads are well-developed, hard-surfaced, and suitable for all types of weather. In other valleys which are more remote, the roads tend to be made of packed dirt, are narrow and soft-shouldered, and are very dependent on the prevailing weather conditions. Because Korea experiences a rather intense and lengthy summer monsoon period, using the roads is sometimes quite difficult.

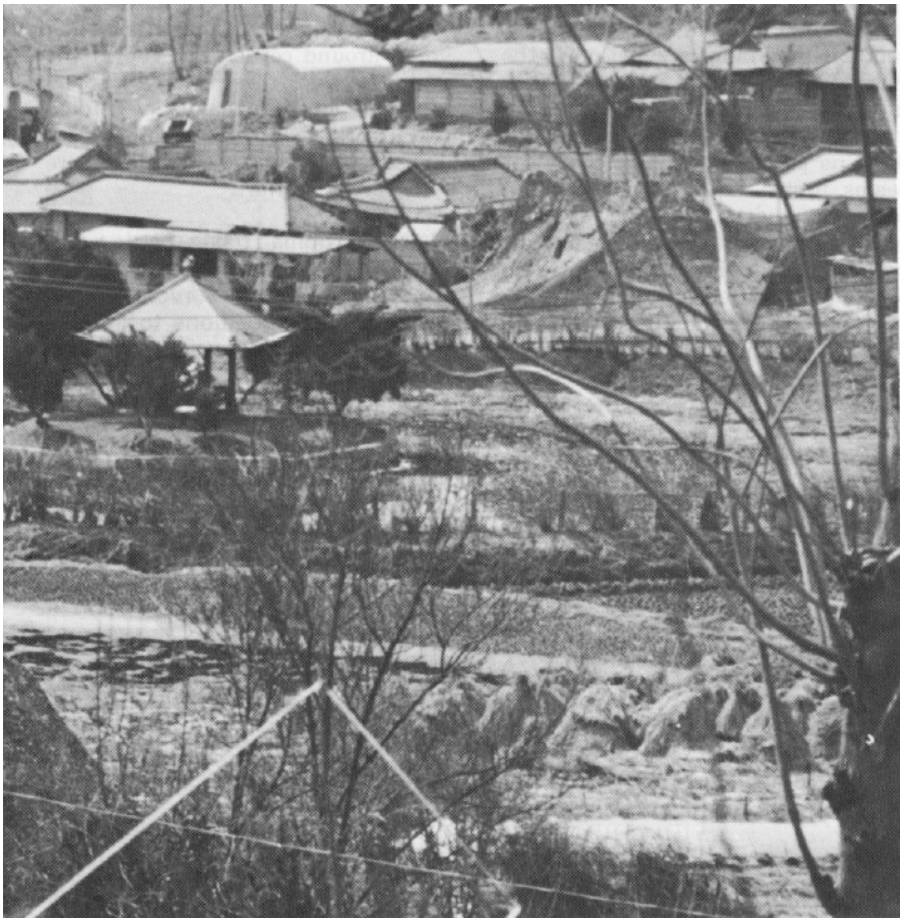


Valley roadways serve both tactical and farm vehicles.

Howitzers, houses, or haystacks?

But there is a third even more difficult problem that serves to compound the effects of the other two. The valley floors not only hold the roadways, but they also serve as both farming and village areas. As is well known, Korea's major agricultural crop is rice, and the vast majority of the arable land is dedicated to its production. For the majority of the year, including the rice planting and growing season, the rice paddies are absolutely impassable by all types of military vehicles. Because the paddies must be avoided, military convoys and tactical movements are usually restricted to those roads capable of supporting heavy vehicle traffic.

This situation creates obvious problems for the field artillery. First, it is difficult for artillery battalions to disperse their batteries within the compartments. This problem may be addressed by having the zone of the supported unit extended across two compartments, but this solution tends to complicate both the fire support and internal control of the battalion by reducing its ability to mass its subordinate elements and stretching its communications system. Commanders



must choose between positions that have either a strong operational or survivability potential because it is rare for a single location to have both.

The nature of the valleys makes it difficult to find positions that provide some of the basic ingredients for enhanced survivability. There are very few low hills or terrain folds which offer position masking. Except in very isolated instances such as along mountain bases, the absence of large, mature trees excludes the concealment offered by foliage.

Although there is no easy or perfect solution to this dilemma, recent field experience by the 2d Infantry Division Artillery units participating in the annual Team Spirit Exercise indicates that the best approach is to move artillery batteries into the Korean villages.

There are in Korea, as in other operational theaters, numerous small villages that dot the countryside. These villages usually consist of about two dozen small buildings made of loosely packed brick with a thatched or corregated metal roofing. The Korean buildings tend to be less solidly constructed than those found in other countries.

The buildings do, however, provide limited protection and cover. Moreover, they offer as their major merit the provision of concealment. It is relatively easy to position pieces as large as M110 howitzers between the huts of most villages. The addition of the camouflage net greatly enhances this siting technique and makes ground and air observation very difficult. Because of the agricultural basis of village life in the rural areas, it is normally a simple matter to augment the net with straw and other items of natural camouflage which further reduce the possibility of detection.

During Team Spirit 84, one M109 howitzer battery occupied a Korean village and went undetected by hostile aircraft for over a day. At one point, a general officer flying through the area noted some movement on the ground but was unable to determine the type of unit in the village even though he was hovering directly overhead. It was only upon landing and being greeted by the battery commander that he realized he was in the center of a firing battery position.

In addition to offering good concealment and limited hardening, the Korean village also provides the best all-weather hope for trafficability. The limited roads in the remote areas are constructed primarily for the rice farmers to get from their villages to the rice paddies and the markets. This means that the limited road network is really a web that connects the villages. Because traveling across the paddies is impossible except during the winter, the roads are heavily used for vehicular traffic throughout the year. Village roads usually provide at least two ways to enter and depart so that in the event of rapid or emergency displacement, there is some chance to move.

The villages have some distinct limitations that must be considered. The time required to lay the battery is greatly increased. It is virtually impossible to lay the tubes without moving aiming circles several times around buildings, through small garden plots, across rice paddies, and down streets. In addition, the roadways are usually narrow and limited, so maneuvering large vehicles must be orchestrated to ensure that key vehicles do not find themselves blocked into confined, dead-end streets.

Along this same line, occupation of a village may require some extensive position preparation by the advance party. If the town's main power line runs across the main entrance suspended a mere 7 feet above the roadway, then plans will have to be made to either re-route the convoy or re-route the line. If a fence defines an entrance point too narrow for howitzers or trucks, then it will have to be removed and subsequently replaced after the weapon is in position. Obviously, some of these considerations would not be of great concern under combat conditions.

One of the major advantages of being in a village may be the ready availability of telephone service and electrical

Photos by Major M. Thomas Davis

Aiming circles must be moved around buildings and down streets.

power. British forces operating on the Falklands made excellent use of the commercial phone system. American forces would be wise to follow this example, but they must take care to avoid tearing it out during occupations. Electrical power, if available, can also be useful for maintenance, mess, and medical services.

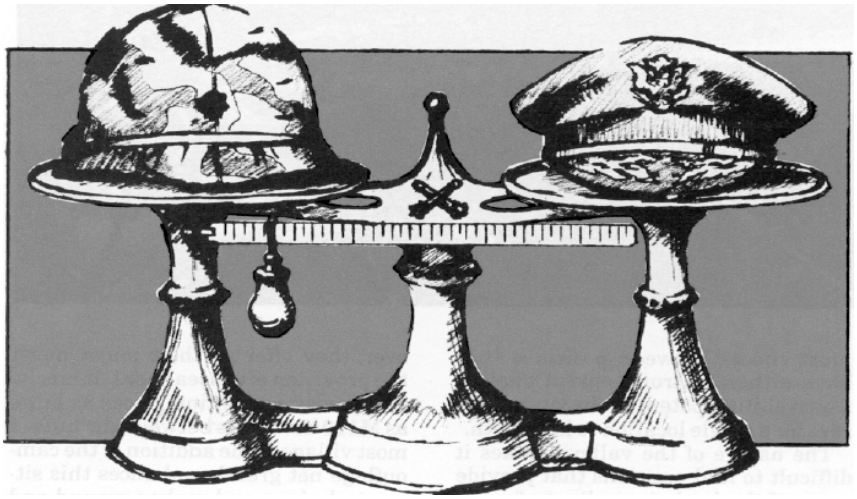
As Team Spirit 84 progressed, it became common to find field artillery batteries using villages for position areas. The roads made the villages accessible, and their very nature made them attractive for survivability. Although they offered only moderate position hardening, they provided concealment that was unavailable elsewhere in this demanding theater.

The bottom line is simple: It is difficult for field artillery forces to find acceptable terrain for occupation in the Korean environment. Because the villages offer the best locations in a difficult situation, they should be used as often as possible. As simple as that seems, it still requires training. Battery commanders are not accustomed to looking at villages for occupations because most of their opportunities to occupy are focused on traditional firing points where live fire can be conducted and Army Training and Evaluation Program occupation times can be tested. Chiefs of firing batteries are not accustomed to moving aiming circles from place to place throughout the position area in an effort to lay the battery, and the communications chiefs may have wire systems designed for standard displacements rather than going around corners and down the main streets. So these tactics and techniques, as any others, must be studied and practiced, but the benefits of increased survivability and mobility are well worth the effort.

Major M. Thomas Davis, FA, is a student of the Marine Command and Staff College. He has served in a variety of artillery positions to include battery command with the 3d Armored Division and operations officer for the 1-15 Field Artillery of the 2d Infantry Division in Korea. Major Davis received his commission from the US Army Military Academy and holds a master's degree from Harvard University.

Yours to Choose

by Major Roger A. Rains



As a new battalion commander, you have had to make some tough decisions, but no decision has been more difficult than the selection of a new executive officer. Obviously, you want the very best man for the job, and you welcome this unusual opportunity to choose your second in command. Unfortunately, all you have to go by is the information the division artillery adjutant has provided and the results of your long-distance telephone conversations with the two candidates.

Certainly, both majors have fine backgrounds. In fact, they're remarkably similar fellows. Both Major Schole and Major Cocker have been firing battery commanders, both have served as battalion S3s and motor officers, and both are graduates of the US Army Command and General Staff College. Neither candidate is familiar with your installation, and their retainability appears identical. Moreover, Major Schole and Major Cocker both seem eager and quite articulate.

The only substantial difference between the two officers is their most recent assignment. Major Schole has been a senior instructor and doctrine writer at the US Army Field Artillery School; Major Cocker has been a brigade fire support officer in Korea. Major Schole tells you that he has been an action officer in the development of several new doctrinal publications and has made several visits to the National Training Center. He is also well acquainted with the new command and control system your unit is about to receive. Obviously, Major Schole is familiar with what is up-and-coming in the Field Artillery Community. Major Cocker knows fire support inside out and has been involved in the receipt of several new systems, but unlike Major Schole he has never been to the National Training Center.

You have talked with artillerymen who know the two candidates and have received strong endorsements for both men. What are you going to do? What criteria for selection will you use? Will you give weight to the instructorship or to the fire support officer's experience? It's yours to choose, but maybe some advice from an admittedly small sampling of experienced battalion commanders will help you make the decision.

When confronted with this situation, one commander responded that Major Schole was his clear preference. For this commander, an intimate knowledge of field artillery matters and current developments as well as the ability to teach were paramount.

Another commander found the choice much more difficult. He liked the idea of having a field-experienced fire support officer as his executive officer, but in the end he chose Major Schole. The deciding factor for this commander was the instructor's experience at the National Training Center. He felt that these important experiences were pivotal and would enhance the capabilities of an executive officer.

A third battalion commander also selected Major Schole. He readily admitted a prejudice resulting from his service at Fort Sill, but he still felt that the insights gained in staffing and the experiences acquired by briefing senior officers at the Field Artillery School were deciding factors.

But how would you decide? When faced with a choice that has such balanced variables, what considerations would you pinpoint as determining factors? Do the views of these three battalion commanders reflect your views of the relative merits of the two candidates and their experiences? It's yours to ponder, and it's yours to choose!

Redleg News

ITEMS OF GENERAL INTEREST

After the Ball

According to a policy change recently announced by Army personnel planners, officers attending advanced courses in 1985 should know not only where they are going but also what their next job will be by the 10th week of training.

Such procedures, known collectively as the Officer Advanced Course Advanced Assignment Program, result from recent revisions in officer advanced courses (OAC).

As the US Army Training and Doctrine Command branch schools begin to add assignment-specific modules to the advanced courses, some officers will stay in school longer than others. The newly revised officer advanced course is 20 weeks long. Also, there will be from 1 to 6 weeks of intensive, job-specific, follow-on training available after the advanced course.

About 6 months before the advanced course begins, officers will be asked to tell the Army where they would like to be assigned after training. Then, about 2 months before courses begin, assignment managers will write to officers about their tentative assignments.

During visits early in the course, branch assignment managers will talk with the officers and make changes, where appropriate, to the original assignments.

Shortly thereafter, requests for orders will be sent to gaining commands which will decide on the type unit and the duty position each officer will be assigned. Given this feedback, the schools will schedule the officer to receive the follow-on training needed for his new job.

Details regarding the new policy are contained in a November 1984 message sent to major commands from the US Army Military Personnel Center (MILPERCEN). Officers desiring more information on the program should visit their local military personnel offices, or contact MILPERCEN, ATTN: DAPC-OPD-M, 200 Stovall Street, Alexandria, VA 22332-0400. The telephone numbers at MILPERCEN are AUTOVON 221-7883/7884 or commercial (202) 325-7883/7884.

Chalk up the Points

The revised Promotion Point Worksheet (DA Form 3355) for promotion to E5 and E6 should be in the field by now.

The revised form is scheduled for implementation in May and June. It emphasizes physical fitness, self-discipline, professional competence, and a commitment to self-improvement and achievement.

The commander's recommendation for promotion will be a part of the new form. Separate correspondence will not be required.

Duty performance points, awarded by the commander, have been increased from 150 to 200. Promotion board points have been decreased from 250 to 200.

Points for the skill qualification test (SQT) have been increased from 150 to 200. Soldiers will not earn points for SQT scores of 59 or below.

Points for military and civilian education will be in two separate categories. Military and civilian education was worth 200 points on the old form; now, soldiers can earn up to 150 points for military education and up to 100 points for civilian education.

Points for military training, which consists of individual weapon qualification and the physical readiness test, have been added to the form. Military training will earn up to 100 points.

Time-in-service and time-in-grade, worth 100 points each on the old form, have been eliminated. Soldiers will not earn points for on-the-job experience or high school completion.

Awards and decorations will earn 50 points on the new form, just as they did on the old form. (US Army Military Personnel Center)

An Opportunity for Warrants

According to the US Army Military Personnel Center (MILPERCEN), a Department of the Army board will meet in June to select warrant officers to serve as operations research and systems analysts (MOS 750A).

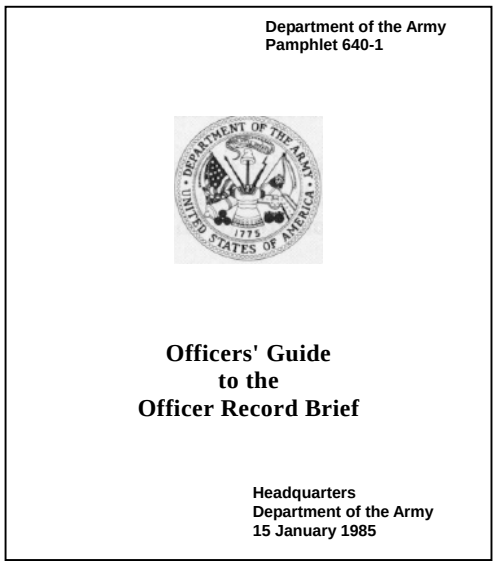
Warrant officers selected will receive up to 18 months of full-time graduate education paid for by the Army. Up to 24 months of education can be paid for in exceptional cases.

Only warrant officers now on active duty may apply, and the MOS is not open to recruitment from enlisted soldiers. To apply, warrant officers must hold a bachelor of science or master of science degree, have exemplary records, and be willing to dedicate themselves to academic excellence in a challenging program.

Operations research and systems analysts will expand the Army's ability to give its decision-makers highly skilled, quantitative analytical support. They gather data and design mathematical models and simulations of military operations and then use these models and simulations to conduct analyses of costs and resources.

These warrant officer analysts will give the Army valuable and needed skills which were formerly provided only by commissioned officers.

Eligible warrant officers interested should submit applications as outlined in AR 621-1, paragraph 3-3. The deadline for applications is 31 May 1985. For more information, call MILPERCEN's Warrant Officer Professional Development Branch at AUTOVON 221-7844 or 221-7843.



New Pocket Guide

A new pocket-sized guide to the Officer Record Brief (ORB) is being sent to all Army officers' home addresses. The new guide, "The Officers' Guide to the Officer Record Brief," is DA Pamphlet 640-1.

The pamphlet explains the ORB and its importance to officers. It tells officers what each data element on the ORB describes and how to correct errors. The guide is important to officers because their careers depend on understanding the ORB and keeping it up-to-date.

The pamphlet will also be distributed in units down to battalion level. Officers who have not received it should see their publications control officers about getting a copy or contact the US Army Military Personnel Center, ATTN: DAPC-OPZ-IM, 200 Stovall Street, Alexandria, VA 22332-0400; AUTOVON 221-8140, or commercial (202)325-8140.

New CVI/VI Regulation

Since more other than regular army (OTRA) officers are now requesting a conditional voluntary indefinite (CVI) or a voluntary indefinite (VI) status, a change to Army Regulation 135-215, *Officer Records of Service on Active Duty,* provides guidelines for maintaining necessary strength limits in both high and low density branches and specialties and meeting the basic needs of the Army. The new system will require the establishment of a centralized board responsible for the qualitative management of the officer corps. The proposed process will include a centralized screening process which will review the CVI and VI applications of all OTRA officers requesting career status.

Evaluation of request for CVI status will be accomplished by a board which will include one member from a Reserve Component, an appropriate minority, and a female representation. The board president will be, at a minimum, a colonel. The board will select only those applicants with the potential to serve 20 years active federal service and whose manner of performance is competitive with contemporary officers. CVI applications will be processed as follows:

- OTRA officers must complete at least two and one-half years continuous active federal commissioned service (AFCS) prior to submitting a request for CVI.
- Officers will not be scheduled for advanced course attendance until CVI status is determined.
- Applications will include a recommendation from the officer's chain of command and will be forwarded to arrive at the officer's career management division no later than the 27th month of AFCS.
- Applications will include a statement by the officer to indicate that the individual understands that a branch transfer commensurate with the Army's needs may be necessary in exchange for continued active duty. Each officer will identify three branch preferences.
- If the officer desires to be voluntarily branch transferred, this desire should also be noted on the application.

Board membership and procedures for VI will remain the same as that used for CVI with the following notable exceptions:

- OTRA officers will be considered for VI status by the centralized board prior to completion of eight years AFCS.
- The centralized selection board will decide on the request based on the officer's file for VI at the seventh-year, six-month point of AFCS. All CVI-approved officers will be identified automatically by computer from the officer master file; so no formal application is required for VI.
- All officers approved for VI will be allowed to remain in the Army until selected for major and integrated into the Regular Army unless separated sooner under other appropriate regulations.

The Department of the Army hopes to succeed in balancing all branch strengths. If, however, basic branch shortages still remain when an officer's CVI or VI request is considered it may be necessary to rebranch officers from over-strength specialties to those which are under strength. If this situation occurs, every effort will be made to assess the impact of such a move on a specific officer's career. Moreover, the Department of the Army will make every effort to branch transfer only volunteers, giving preference to those officers who have the most experience in the new branch.

All officers already approved for CVI or VI will continue active duty service under the old CVI and VI criteria. This new plan is now being implemented.

Further information may be obtained by writing to MILPERCEN, ATTN: DAPC-OPP-M, 200 Stovall Street, Alexandria, VA 22332-0400, or by calling the Personnel Actions Branch, Combat Arms Division, AUTOVON 221-0146/7 or commercial (202) 325-0146/7.

NET Stability

The US Army Military Personnel Center (MILPERCEN) recently established procedures to reclassify, reassign, and stabilize soldiers who undergo new equipment training (NET) and earn a new military occupational specialty (MOS) or additional skill identifier (ASI) after completing the training.

Modernizing units scheduled for NET will be filled to 90 percent of authorized strength in system-related MOSs and ASIs (operators and maintainers) 60 days before NET. Units will be maintained at that strength until 60 days after formal training has been completed.

In order to qualify for NET, soldiers must not be pending separation action or have an approved reenlistment option which will cause assignment to a location where the NET MOS or ASI cannot be used.

Soldiers must meet reclassification criteria for the NET MOS as specified in Army Regulation 611-201, *Enlisted Career Management Fields and Military Occupational Specialties*, and must not have received assignment instructions to a non-NET unit.

The local military personnel officer (MILPO) will report the new MOS or ASI for which a soldier is undergoing new equipment training. MILPOs will report the new MOS or ASI through Standard Installation/Division Personnel System to MILPERCEN 60 days before the start of the new equipment training. This will ensure that the soldier's newly acquired skill is visible in the automated personnel system, and that the soldier is subsequently reassigned to units where his or her skill can be used.

Soldiers will be stabilized from 60 days before through 60 days after new equipment training. The MILPO establishes the stabilization period by adjusting the assignment eligibility and availability code or date eligible for return from overseas. The stabilization policy applies only to soldiers who are actually undergoing NET; it does not apply to other support personnel in the unit.

At the beginning of the NET stabilization period, the NET unit will compile a roster of soldiers scheduled for training, and will send the roster through the MILPO to the appropriate MILPERCEN career branch. When the training is complete, the unit commander will certify the training roster and send a copy back to MILPERCEN through the military personnel officer.

Soldiers who do not complete NET will revert to the MOS they held previously. The MILPO will terminate the stabilization period and delete from their new assignments any soldiers who were on assignment instructions in a NET MOS or ASI. (MAJ Ron Poertner)

Additional Skill Identifiers

An additional skill identifier (ASI) is contained in the sixth and seventh characters of some enlisted military occupational specialty codes (MOSC). It identifies skills acquired through schoolhouse training or by new equipment training team (NETT) instruction in conjunction with on-the-job training (OJT).

Currently, there are a number of ASIs associated with the field artillery career management field (CMF) 13. These include:

Code	Title	MOS
H1	Meteorological Equipment Maintenance	93F
Q8	Tactical Air Operations	13F
R4	HEMTT Operations	15E
S8	Multiple Launch Rocket System (MLRS) Organizational Maintenance	13M
U6	Field Artillery Weapons Maintenance	13B
X3	TACFIRE Remote Terminal Operation	13E, 13F, 13W, 13Y, 13Z, 17C
X5	Radar Maintenance (Firefinder)	13R
Z3	Lance Organizational Maintenance	15D
Y1	Pershing II	15E
Y1	TACFIRE Operations Specialist	13C (SFC only)
Y1	Meteorological Data Systems	93F

Additional skill identifier duties should not be so demanding that they require full-time attention. If ASI duties do require a full-time effort, they should be able to stand alone as an MOS.

An ASI is awarded to a soldier halfway through an ASI producing course conducted by the training base, or it may result from the soldier's completion of a combination of NETT instruction, 90 days on-the-job training, and a commander's certification. It is the responsibility of the chain of command to ensure that the ASI is entered in the soldier's Military Personnel Records Jacket (MPRJ, 201 File).

The personnel system cannot place the right soldier in the right job unless he can be identified; therefore, ASIs are becoming increasingly important as the force modernizes.

Fire Planning During Mutual Support Operations

by Master Sergeant Johnnie F. Pearson, Jr.

Fire planning with the tactical fire direction system (TACFIRE) is a giant step forward for fire planners. However, to maximize its capabilities, a thorough understanding of planning during mutual support unit (MSU) operations is essential. This article is written from the perspective of an operations section at a direct support (DS) battalion or division artillery. Unless specifically stated the information presented applies at both echelons.

The capabilities and sustainment of mutual support operations must be considered throughout the fire planning sequence. How does one ensure that the plan will get fired when the "other guy" is in control? What happens to the plan when control is passed prior to completing the plan in the computer? The answers to these questions need to be explored.

To ensure the success of mutual support operations at battalion level the specific steps are:

- Build ammunition and fire unit (AFU), battlefield geometry support (SPRT), and commander's modification (MOD) files in both computers.
- Develop the preliminary target list (FPLST) in own computer only.
- Develop the fire plan target list (FPTGT) in own computer only.
- Transmit the fire plan target list to the MSU computer.
- Rebuild AFU file for fire units that have moved.
- Compute the plan in own computer only.
- Resolve nonballistic exceptions in own computer only.
- Execute and transmit the plan in own computer only. Fire units record data and update targets from this point on.
- Fire the plan.
- Perform file maintenance in both computers.

At the division artillery level the specific steps are:

- Direct all battalions participating in the plan to build AFU and SPRT files for the plan.
- Build AFU, SPRT, and MOD files in both computers.
- Develop the preliminary target list in own computer only.
- Develop the fire plan target list in own computer only.
- Transmit the FPTGT list to the MSU computer.
- Rebuild AFU file for any fire unit that has moved.
- Compute the plan in own computer only.
- Resolve nonballistic exceptions in own computer only.
- Transmit the targets in a schedule of fires (TISF) to battalion computers.
- Resolve ballistic exceptions, if any, in own computer only.
- Fire the plan.
- Perform file maintenance in all computers, that is, battalion and mutual support.

As simple as these steps seem, they require amplification if MSU fire planning is to be understood and executed.

Establish Guidance

The first step in the nonnuclear fire planning (NNFP) sequence is to establish the commander's modification file (NNFP MOD file) that provides commander's guidance for the plan. In order to guarantee uniformity among all planning agencies, operations sections at all levels build a special NNFP MOD file under a plan called MASTER from the current fire mission MOD file. The plan MASTER MOD file includes all *current* tactical and technical fire control (TTFC/TFC) commander's criteria and any changes from the current plan for fire planning only. It is critically important to note that when the file is built from the current plan *all current* commander's criteria are built into the plan MASTER. The file must then be tailored for fire planning. Operations sections must verify the file's accuracy and notify their remote subscribers that the plan has been built. Thereafter, all future MOD files will be built from the plan MASTER MOD file into any new plan, in *both computers. Print any new plan MOD file and verify its accuracy*. Modification files must be identical in all computers and especially the mutual support computer if the NNFP data base must be used during mutual support operations. It should be obvious that the file will at some point need modification to meet changes in the tactical situation. Changes to the file should be made with the appropriate NNFP commander's criteria message in *both computers.*

When fire planning with a mutual support unit, an area of the MOD file that must be thoroughly understood is that of fire unit (FU) association. The fire mission fire unit selection input message (FM;FUSEL) is used to associate fire units with a battalion for fire mission processing. That same association must be accomplished for fire planning. Fire units, are associated for fire planning using the nonnuclear fire planning fire unit selection input message (NNFP;FUSEL).

At battalion level, fire unit association must be checked to ensure that all fire units assigned or attached, to include the mutual support fire units, are associated with the computer. A ballistic solution will not be produced for fire units that are not associated.

At division artillery level, fire unit association must be checked to ensure that fire units are associated with the *correct* battalion computer.

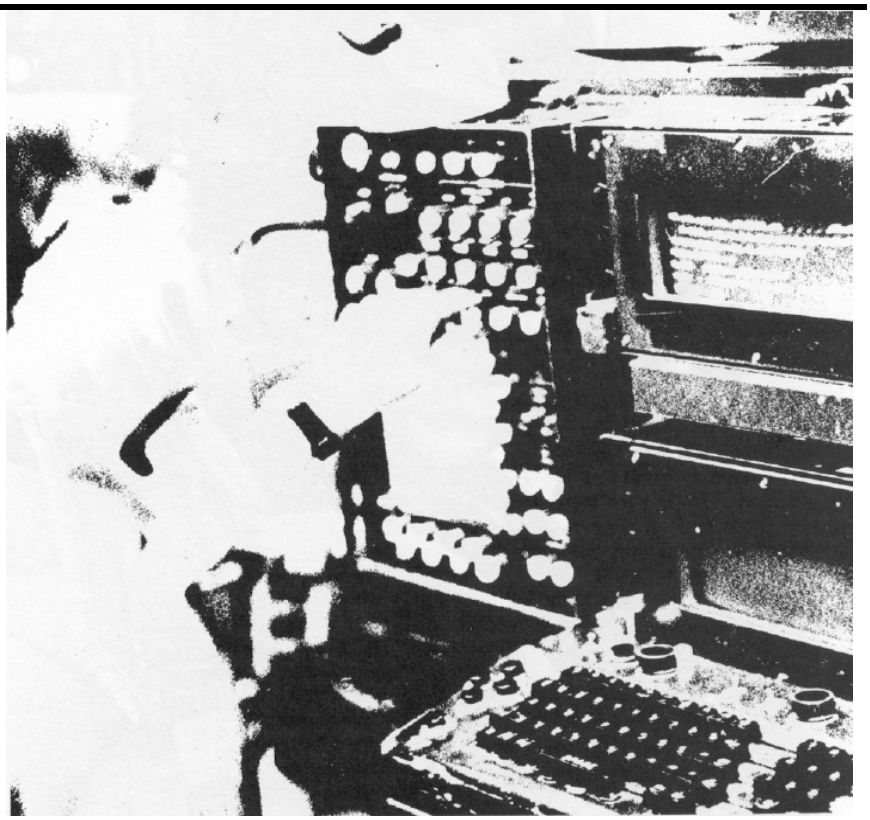
The field artillery support plan and "battle books" will assist in determining the correct organization for combat for that particular operation or contingency plan. The targets in a schedule of fires (TISF) report will not be transmitted for nonassociated fire units. Also, if fire units are incorrectly associated (i.e., associated with the wrong noncontrolling battalion computer) targets for that fire unit will be sent to the wrong computer.

The NNFP attack methods table must be verified if attack methods for a plan are different than those used for fire-mission processing. After the tactical and technical fire control MOD file is built from current into plan MASTER, enter any changes from the TTFC MODs into plan MASTER using the nonnuclear fire planning commander's attack method message (NNFP;ATTACK). It should be obvious that if the attack tables are different between computers then each computer will produce a different solution.

Fire unit exclusions and reservations must also be verified because exclusions entered in the current plan are frequently changed for fire planning.

Establish Related Files

The next step in the fire planning sequence is to establish the related files. Related files are the ammunition and fire unit and battlefield geometry support files which must be built into both computers. Whenever possible use the appropriate build message. As a precautionary measure, when building the related files in the mutual support computer, *never* use a command message. Each piece of SPRT and AFU



data will be sent as a separate transmission. This increases network loading and places additional requirements on the artillery central console operator (ACCO).

Artillery missions—general support (GS), general support reinforcing (GSR), and direct support (DS)—play a very important role concerning building the ammunition and fire unit file. Mutual support units with a mission of general support or general support reinforcing may not *always* be included in a direct support battalion's plans because the fires of the GS and GSR units are habitually planned by force artillery headquarters. Procedures established by the new equipment training team (NETT) are to store all fire units ready to fire (READY:X) and not as back-up (BKUP:X) fire units in the current AFU file. The nonnuclear fire planning program will allow any fire unit stored as ready to fire in the current AFU to be built into a plan. Although the mutual support unit's fire units are ready to fire, they will not be selected during tactical and technical fire control because they are excluded. At battalion level, to prevent building GS or GSR fire units into plans that you originate, always build by fire unit or weapon type.

At division artillery level, there is no back-up capability, and all fire units are stored ready to fire. It is even more critical to build by fire unit or weapon because the nonnuclear fire planning program will build the first 30 fire units *listed* in file into a new plan, regardless of weapon type. If the fire unit or weapon is not specified and the first 30 fire units listed happen to be Lance, multiple launch rocket system, and aircraft, that's what you will get.

Incorporating Fire Unit Files

This leads us to a troublesome area concerning the AFU file when the force artillery headquarters is the originator of the plan. To accommodate MSU operations in the case where a direct support battalion does have a mutual support unit with a mission of general support or general support reinforcing, direct support battalions *must* build mutual support fire units into the plan. The battalion nonnuclear fire planning program will not store target scheduling data (targets in a schedule of fires) for a fire unit not built into a plan. Therefore, no ballistic solution can be produced.

Do not become confused between the functions of the NNFP;FUSEL and the contents of a planned AFU file.

The AFU file contains only those fire units *built into* a plan, and only those fire units will be used during computation of the plan. The NNFP;FUSEL *controls* "who owns whom," regardless of the contents of the AFU file. The AFU file provides the fire power; the NNFP;FUSEL defines ownership. Fire units *must be* associated correctly, and the AFU file *must be* built to compute and transmit a fire plan.

Once the MOD file and the related files have been built, target lists must be developed. These lists include the preliminary target list which includes all targets that may become fire plan targets; the fire plan target list which includes all targets selected to become fire plan targets; and the target in a schedule of fires report which includes all targets that were scheduled to be fired. The preliminary target list is developed in your own computer only. If mutual support unit operations are initiated during this step and time permits, transmit the preliminary target list to the MSU computer and continue the plan in their computer.

To reduce the total number of transmissions at battalion and division artillery level, the only target list always sent in total to the mutual support unit is the fire plan target list. At battalion level, if the mutual support unit is initiated during this step, transmit both target lists. Once the mutual support unit assumes control continue to develop the fire plan target list in their computer.

At division artillery level, the steps are somewhat different. Transmit the fire plan target list to the mutual support unit. Once the unit assumes control, use the nonnuclear fire plan target update message (NNFP;FPTU) to place those targets that were not transmitted (still in the preliminary target list in the computer) into the mutual support unit's computer. The NNFP;FPTU will take the targets from the MSU's artillery target intelligence file and place them into the preliminary target list. Then, continue to develop the fire plan target list in the MSU computer. When the shelter establishes mutual support, the artillery control console operator enters a standing request for information (SRI) to the mutual support unit for all targets that enter the ATI file. With correct initialization and judicious file maintenance, ATI files will be identical in both computers.

Transmitting the Targets

Another troublesome area is transmitting the targets in a schedule of fire from force artillery to battalion computers during battalion-level mutual support. Procedures developed by the new equipment training team have added the fire mission fire unit selection message (FM;FUSEL) as a message of interest (MOI) to the division artillery operations section, counterfire section, and fire support elements at the tactical and main command posts. When notified by voice that control has not been passed and battalion mutual support operations are *impending*, change the MOD file reassociating fire units to the gaining computer. Then transmit the targets in a schedule of fires report. Since the NNFP;FUSEL controls who gets what targets, the gaining computer will receive the TISF targets for the moving or failed battalion's fire units even though technically mutual support has not yet occurred. *Receipt* of the FM;FUSEL, at the variable format message entry device (VFMED), is the indication that battalion-level mutual support has occurred. Again, fire units must be reassociated before the TISF is transmitted. If not, the gaining computer will not receive the TISF targets for the moving or failed battalion's fire units. If the TISF report is being transmitted and battalion mutual support occurs before the TISF is *completely* transmitted and received, the NNFP;FUSEL must again be changed and the TISF retransmitted to the gaining, controlling computer. Units should take transmitting and receiving

TISFs one step further by establishing a standing operating procedure that requires SECURE VOICE confirmation. At the VFMED, operators receive a digital acknowledgement of their digital command to initiate transmission of the TISF. That acknowledgement is no guarantee that the TISF report was transmitted or received. It only indicates that their message was acknowledged by *their* computer.

At battalion level, plans received from force artillery require immediate attention. Battalion operations and intelligence sections and their mutual support units must guarantee that those plans are executed and transmitted to the battery computer system, no matter who is in control. Expeditious transmission of plans is of paramount importance because of the time required to transmit plans, and because mutual support can happen at any time. Do not delay transmitting the plan to check for ballistic exceptions. Transmit the plan first, then report any ballistic exceptions to the originator of the plan.

Plans originating at battalion level are treated much the same, except when the mutual support fire units are included. A reinforcing battalion's fire units are direct subscribers to the direct support battalion. Prior to transmitting the plan, direct the artillery control console operator to turn the mutual support fire units "on" in the subscriber table, then transmit the plan. Since the mutual support fire units are direct subscribers, they will receive their targets along with the direct support fire units. Again, any target found to be ballistically out of range must be reported to the originator.

It is not necessary for TACFIRE to update fire plan targets for changes in ballistic parameters such as meteorological registrations or for fire unit moves. The battery computer system can store three conventional and one family of scatterable mines fire plans. BCS-equipped units will update their own fire plan targets.

File Maintenance

The last consideration in fire planning during mutual support operations is file maintenance. After the plan is fired it must be deleted from both computers, and the ammunition files must be updated. The easiest method for deleting plans in the mutual support unit is by voice. Old plans should always be deleted to prevent using unnecessary memory space. Never delete plan MASTER; only update it as the tactical situation dictates. Mission fired reports (MFR) are not generated by fire plan targets. The battery computer system must subtract fire plan expenditures and transmit the remaining ammunition on-hand to TACFIRE to update the current ammunition and fire unit file.

Conclusion

The procedures outlined above allow fire plans to be built and fired virtually unaffected by mutual support operations. Though the steps are simple, the considerations are many. These procedures have proven successful during several TACFIRE fieldings in Europe. Mutual support and fire planning are both important features of TACFIRE. These methods allow full use of both with minimum disruption of either.

Master Sergeant Johnnie F. Pearson, Jr., is the Division Artillery Operations Instructor, CECOM NETT No. 2 (TACFIRE), Germany. His past assignments include battery instructor, CECOM NETT No. 1 (TACFIRE); drill sergeant, US Army Training Center; operations sergeant; and chief fire direction computer. Sergeant Pearson has attended the TACFIRE, Fire Support, and Fire Support Element Courses, and he is presently enrolled in the US Army Sergeants Major Academy Nonresident Course.

Aquila...The Army's Scout

by Captain Richard E.T. Sheffield, Jr.

Throughout history field artillerymen have used aerial platforms to accomplish their mission of providing accurate and responsive fire support to the maneuver arms. Be it the observation balloons of the Civil War and World War I, the artillery observers who flew the venerable Piper Cubs of World War II, or the scout helicopters of today, commanders have used flying platforms as an important element within the fire support system. As in the past, commanders of the future will need to see the battlefield in-depth. Consequently they must employ air vehicles to extend their gaze over an ever-broadening and deepening area.

An Aerial Platform of the Future

A new air vehicle that may provide that extended vision is presently being developed for the Army by the Lockheed Missile and Space Company. The remotely piloted vehicle (RPV), nicknamed Aquila (the eagle), is a highly versatile air platform that can gather intelligence, adjust indirect fires, and provide real-time video imagery to the supported unit as well as identify and designate targets for destruction by laser-guided munitions such as the Copperhead. The current operational concept of the remotely piloted vehicle will enable the Army to deploy a survivable air vehicle 20 kilometers beyond the forward line of own troops into enemy controlled areas as well as to facilitate the timely engagement of the enemy by a host of fire support means.

Rounding Out Fire Support Assets

The development of the remotely piloted vehicle coincides with an established trend in weapons development toward more accurate, long-range fires. To be effective, long-range shooters—cannons, rockets, and missiles—require discriminating, survivable target acquisition and designation systems. The remotely piloted vehicle provides the required acquisition means for field artillery weapons of today and the future. It will be able to fly where no commander would want to send a piloted aircraft. For example, the air vehicle can enter a nuclear, biological, and chemical environment and complete its mission. Moreover, by outfitting its payload with both a nighttime forward looking infrared system and a daylight television camera, the RPV operators and the commanders they support will have an eye in the enemy's backyard at all times.

A System Which Ensures Success

Contrary to the musing of the popular press, the total RPV package is a responsive and reliable system. The basic components of the system appear in figure 1. The actual flying element of the system is the air vehicle shown in figure 2. Figure 3 shows the air vehicle being launched by catapulting it from the back of a 5-ton truck. It is controlled by commands issued from a ground control station located with the supported unit. Figure 4 depicts one such facility.

The ground control station will be supervised by a warrant officer designated as the section commander. Given the supported commander's guidance, the section commander will supervise the development of the routes that the vehicle will fly. Both the section and its supported organization will simultaneously receive real-time information obtained by the vehicle.

The mission commander, the section's senior noncommissioned officer, sends commands to the air vehicle through a remote ground terminal. The communications between the remote ground terminal and the air vehicle employ the medium of a unique, jamming-resistant data link. At the completion of its mission, the air vehicle is retrieved by catching it in a net as depicted in figure 5. The recovery subsystem uses near infrared guidance to guide the air vehicle directly into the net. Every element of the system including its support and maintenance equipment is mobile, and the total system can be brought into action in 1 hour and prepared for displacement in 30 minutes.

Organizational Flexibility for Better Support

The location of the RPV system within the Army's force structure facilitates the delivery of timely information as well as the efficient and effective identification and designation of targets. Remotely piloted vehicle batteries will be assigned to each corps' target acquisition battalion under the Army of Excellence design. These RPV batteries may be given missions to support divisional units or left under corps control.

Moreover, an RPV battery will normally be further broken down into sections

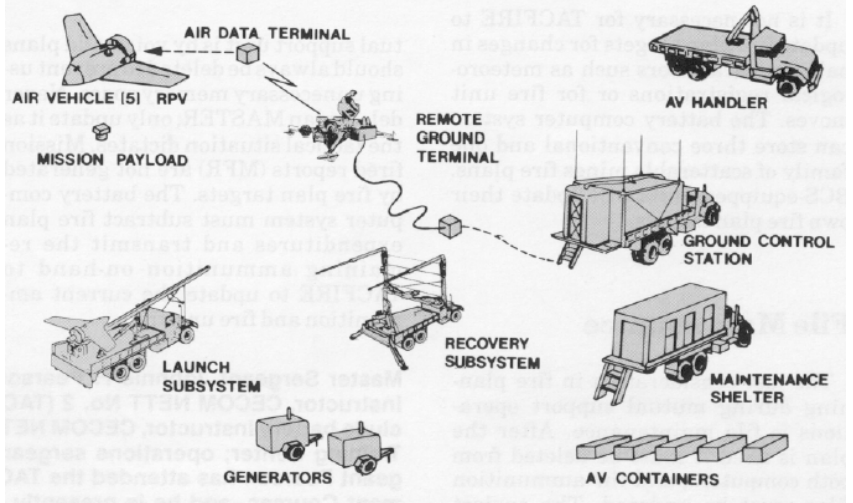


Figure 1. Basic components of the system.

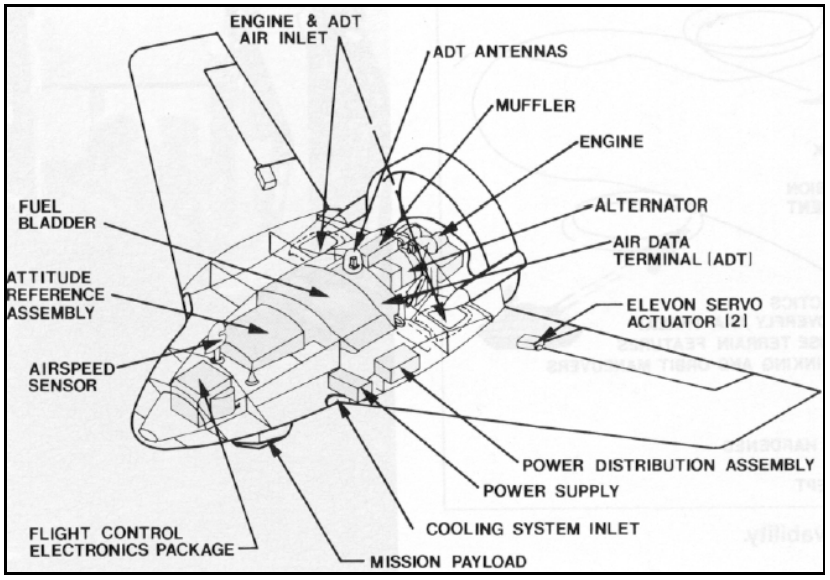


Figure 2. Components of the air vehicle.

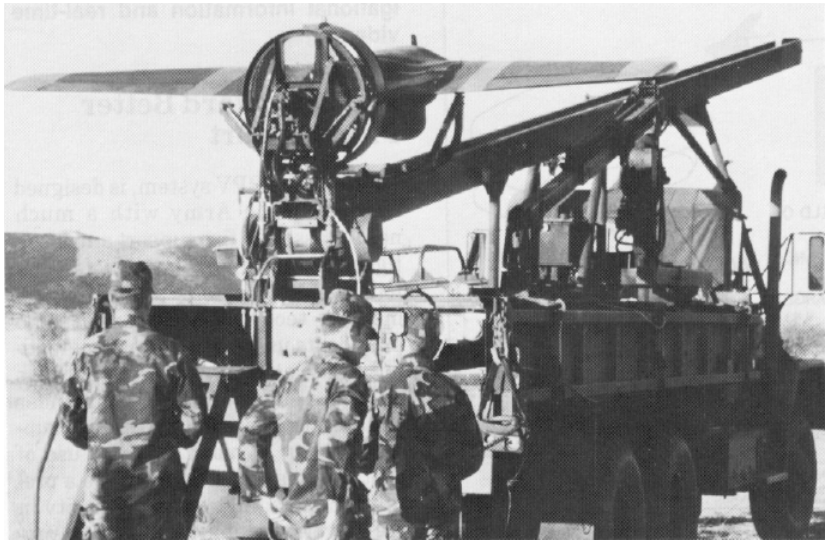


Figure 3. Remotely piloted vehicle readied for launching.

to provide direct support at the maneuver brigade level. Such mission assignments would be especially beneficial to the brigade commander because the remotely piloted vehicle's capabilities, including its 3-hour maximum endurance potential, are particularly suited to overview a brigade's area of influence and interest. A wisely employed RPV section could dissipate a significant part of the "fog of war" for the brigade commander. Through his brigade S3 and fire support section, the supported brigade commander could exploit the system's "over-the-hill" perspective to produce information regarding priority and other intelligence requirements necessary for planning and executing the scheme of maneuver. RPV section personnel would determine what routes the air vehicles would fly. The fire support

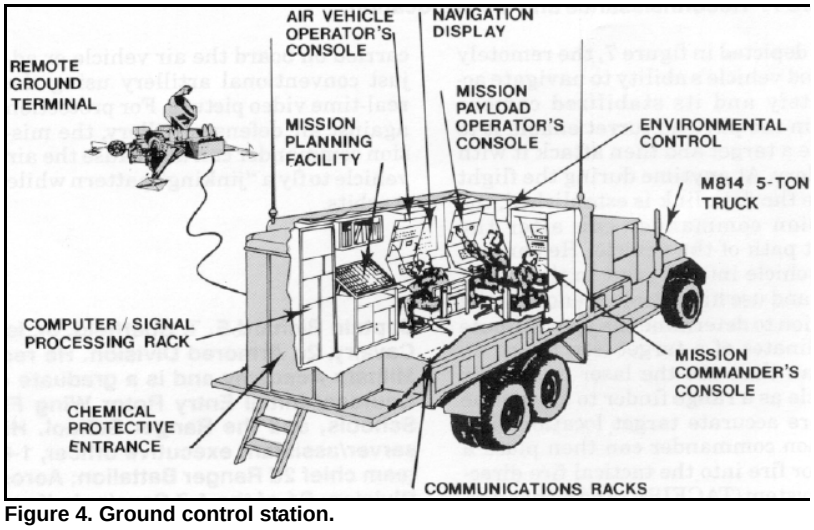
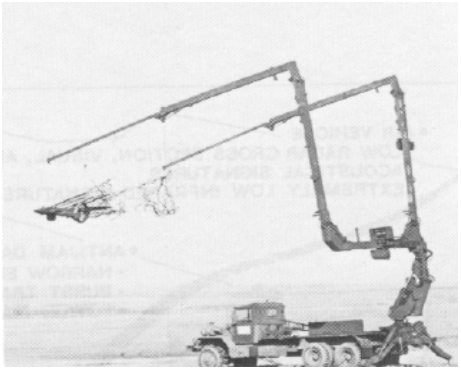


Figure 4. Ground control station.



Figures 5. Safely home again.

section would assist in both analyzing the information gathered and determining how best to attack the targets discovered.

Capable of High Lethality

The remotely piloted vehicle has capabilities which facilitate its integration into a unit's fire support plan. It is highly survivable (trying to hit the air vehicle is like trying to hit a fly with a shotgun from 20 yards), and it is easy to recover and reuse (see figure 6). The air vehicle has a navigation system which communicates with the ground control station in order to determine the vehicle's precise location. Before a flight, the mission commander programs the flight route into both the ground control station and the air vehicle computers. The air vehicle then flies the route. If data-link communications are lost, the air vehicle will fly to a preprogramed "lost-link" way point and attempt to reestablish the link. If communications are not reestablished at the lost-link way point, the air vehicle will spiral up gaining altitude to pick up the data-link signal, or it may purposely crash to the ground to destroy itself if it cannot pick up the link.

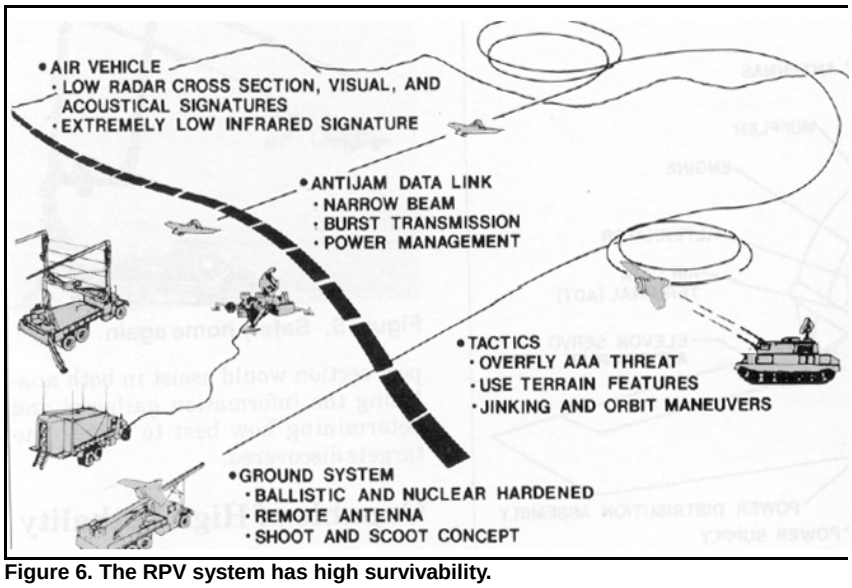


Figure 6. The RPV system has high survivability.

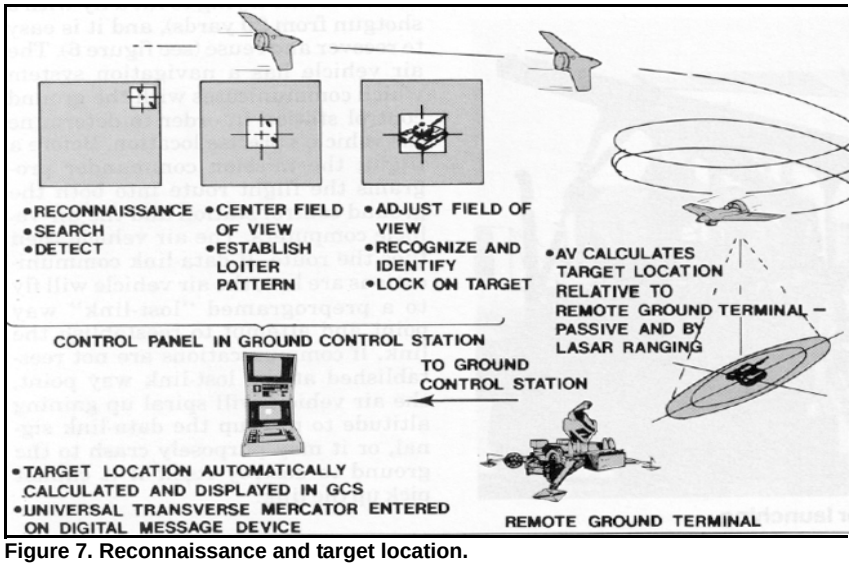


Figure 7. Reconnaissance and target location.

As depicted in figure 7, the remotely piloted vehicle's ability to navigate accurately and its stabilized camera within the payload turret enable it to locate a target and then attack it with artillery. At anytime during the flight while the data-link is established, the mission commander can alter the flight path of the vehicle. He can put the vehicle into an orbit in the target area and use his console readout of the location to determine the approximate coordinates of a target (see figure 8). He can then use the laser on the air vehicle as a range finder to determine a more accurate target location. The mission commander can then place a call for fire into the tactical fire direction system (TACFIRE) and either designate with one of three laser codes carried on board the air vehicle or adjust conventional artillery using the real-time video picture. For protection against air defense artillery, the mission commander can also cause the air vehicle to fly a "jinking" pattern while it orbits.

Figure 8. The consoles of the ground control station provide accurate navigational information and real-time video.

A Step Toward Better Fire Support

Aquila, the RPV system, is designed to provide the Army with a much needed asset for fire support and intelligence gathering. The remotely piloted vehicle exploits a wide assortment of technological advances to provide its users with clear, timely information at minimum risk, but it is up to the supported unit commander and his staff assisted by the fire support section to make the best use of that information. There will be a premium on imagination and audacity in maneuver headquarters and fire support agencies. Innovative leaders who are well-versed in AirLand Battle doctrine, tactics, techniques, and procedures and who are intimately familiar with the doctrine and equipment of their adversaries will find in the remotely piloted vehicle a tool of exceptional potential and versatility. Their challenge is to realize that latent capability of a system that can take off and soar with the wings of an eagle.

Captain Richard E. T. Sheffield, Jr. is currently the S4 of the 2d Squadron, 1st Cavalry, 2d Armored Division. He received his commission from the US Army Military Academy and is a graduate of the Field Artillery Basic and Advanced Courses, Initial Entry Rotor Wing Flight School, Airborne and Jump Master Schools, and the Ranger School. His past assignments include forward observer/assistant executive officer, 1-82 Field Artillery, 1st Cavalry; fire support team chief 2d Ranger Battalion; Aeroscout Platoon commander, 4-7 2d Infantry Division; S1 of the 4-7 Cavalry in Korea; and S4 for the 2-1 Cavalry, 2d Armored Division.

Hotline

QUESTIONS AND ANSWERS

Your "Redleg Hotline" is waiting around the clock to answer your questions or provide advice on problems. Call AUTOVON 639-4020 or commercial (405) 351-4020. Calls will be electronically recorded 24 hours a day. Queries will be referred to the appropriate department for a quick response. Be sure to give name, rank, unit address, and telephone number. If the line is busy or inoperative, keep trying. The School wants to answer your questions.

Please do not use this system to order publications. Consult your Field Artillery Catalog of Instructional Material for this purpose.

Question: *Our division headquarters is preparing to conduct a command post exercise, and the division artillery headquarters will operate as the main command post. Is there any literature which covers this procedure?*

Answer: FM 71-100 (coordinating draft) should serve as a good starting point for the procedures necessary for the division artillery headquarters to assume the functions of the main command post. Detailed planning and coordination among all staff sections will be required.

Question: *Are there any tapes available that picture the firepower of current field artillery systems?*

Answer: TV tape 6-112, *Terminal Effects of Field Artillery Weapons,* is available at most Training and Audiovisual Support Centers (TASC). Also, a set of 35-mm color slides is available at the Fort Sill TASC. A work request for the slides must be submitted to the Fort Sill TASC; estimated delivery is 2 to 3 weeks.

Question: *Our National Guard unit is experiencing maintenance problems with the M101A1 howitzer, particularly the M12A7D panoramic telescopes and elevation arcs. Are reconditioned howitzers available on a one-for-one exchange basis?*

Answer: Panoramic telescopes and arcs can be requisitioned by the unit, but there are no extra howitzers in stock. The unit can coordinate a repair and return program with Letterkenny Arsenal.

Question: *Is the targeting information in the 1981 Field Artillery Mission Area Analysis still good?*

Answer: Some of the information contained in the Field Artillery Mission Area Analysis published in December 1981 is now out of date, and the volumes themselves are in short supply. Leaders at the Field Artillery School are now investigating the possibility of updating some of the information contained in the analysis. The anticipated release date for such an update has yet to be determined. In the meantime, Redlegs interested in obtaining information on target spread sheets and high payoff targets should contact the Directorate of Combat Developments, Fort Sill, OK 73503-5600.

Question: *How many ground/vehicle laser locator designators (G/VLLD) are authorized per fire support team (FIST)?*

Answer: Each infantry, mechanized infantry, armor, cavalry, and air assault FIST is authorized one G/VLLD. Light and airborne division FISTs are not authorized G/VLLDs.

Question: *Does the information in FMs 6-20-1J/2J and 6-20J apply to units not organized under the J-series tables of organization and equipment (TOE)?*

Answer: The doctrine in the FM 6-20 series applies to all units organized under the H- or J-series TOEs; the unit commander has to make the decision regarding what does or does not apply to his particular unit.

Question: *On the M115 pantel, what is the purpose of the direct/indirect switch on the traversing mechanism, and how does it affect line of sight? Also, what reference should be consulted?*

Answer: The direct/indirect fire bar on the M115 pantel controls the rate of traverse of the pantel head. In the direct mode, an audible click indicates that the line of sight has moved 5 mils in azimuth. In the indirect position, the line of sight traverses in a continuous motion. The reference for these answers is TM 7-2350-304-10, page 264.

Question: *What are the maximum ricochet ordinates and vertical danger zones for a 155-mm howitzer?*

Answer: The maximum ricochet ordinate for a given charge is equivalent to the maximum ordinate of the weapon fired at a 20-degree elevation. This is defined in the glossary of AR 385-63.

The vertical danger zone should be computed as described on page G-4, AR 385-63, and should be computed for each firing position and each charge to be fired.

Question: *FM 6-81 states that, for the M114A1 basic and periodic tests, the test target should be placed at a distance of 50 meters. Why couldn't the test target be placed at 30, 40, or 50 meters from the piece?*

Answer: The test target should be a minimum distance of 50 meters from the muzzle of the piece to reduce possible errors due to parallax and to establish a reference point for boresighting the test target. A distance of 30, 40, or 50 meters could be used, but the closer the test target is to the muzzle the greater the potential for errors in aligning the panoramic telescope. Hence, a good rule of thumb is to put the test target at a distance of 50 to 100 meters from the muzzle.

Question: *Our National Guard M101A1 battalion's modified table of organization and equipment (MTOE) lists a field artillery mechanic with an MOS 13B10 in each firing battery. What exactly is this field artillery mechanic supposed to do and what is his additional skill identifier (ASI)?*

Answer: When the MOS 45D (self-propelled field artillery turret mechanic) was established, maintenance actions on towed weapons (except for the M198) were classified as either crew or direct support actions; thus, there was no longer a requirement for an organizational repairman in the towed unit. The Weapons Department recommended that 13BU6 slots be deleted from the TOEs for M101, M101A1, M102, and M114A1 units; but those slots have not yet been omitted. The additional skill identifier U6 was common to all artillery TOEs as an organizational field artillery repairer.

Question: *What is the standard procedure for turning in damaged magnetic tape cartridges?*

Answer: Damaged magnetic tape cartridges should be turned in at the direct support maintenance facility which will take appropriate action.

Question: *What is the status of the tactical fire direction system (TACFIRE) Advanced Training Program. When will the tapes be distributed?*

Answer: The TACFIRE Advanced Training Program and exportable training material (ETM) are the same program. Distribution of version 5 ETM products is now being made to TACFIRE units.

Fragments

FROM COMRADES IN ARMS

M2 Bradley infantry fighting vehicle.

Making Space for a Redleg

Infantry commanders of units equipped with the M2 Bradley infantry fighting vehicle (BIFV) have become increasingly eager to make arrangements for their fire support personnel—fire support chief at company level and fire support officer at the battalion—to accompany them in their command tracks.

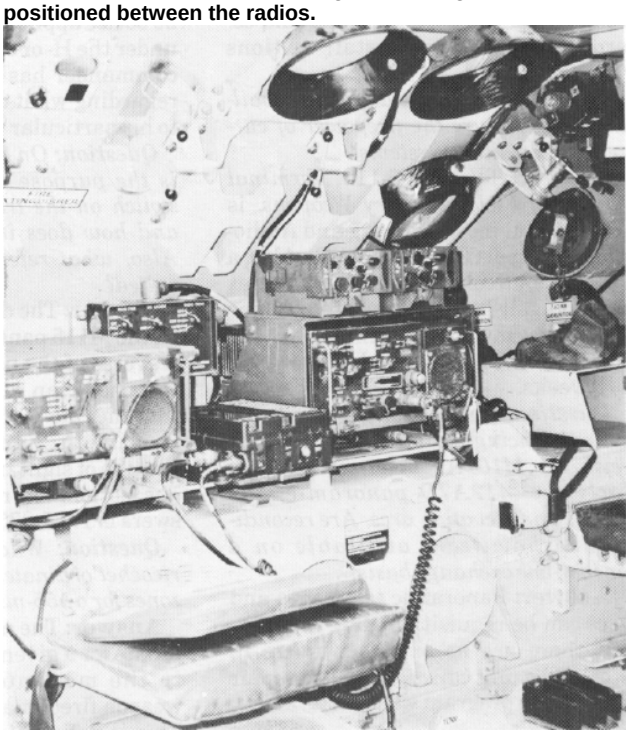
Personnel from Fort Benning's Doctrine and Literature Division (DLD), Field Artillery Branch, Combat Developments Division (CD), and the Installation Maintenance Office combined to form a team to devise a means which would allow fire support personnel to travel with their supported commander in the M2 BIFV and to communicate on at least two radios from either the turret or crew compartment.

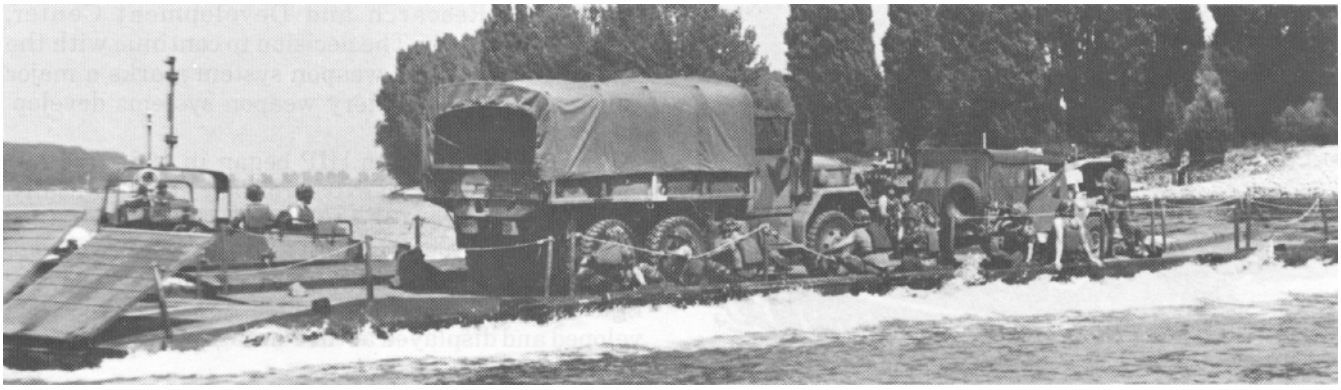
The system developed by the team accommodates both the Vincent secure equipment and either a digital message device (DMD) or a fire support digital message device (FIST-DMD). Vincent secure equipment is mounted over all radios, and a locally fabricated "slide" mount allows the digital message device to be mounted between either the radios in the crew compartment or in the turret. Specifically, the slide mount allows the digital message device to be slid forward for easy access while the fire support chief occupies a seat in the crew compartment or the gunner's seat in the turret.

These modifications allow the FIST chief at the company, or the fire support officer at battalion level to accompany their supported commander and to maintain both voice and digital communications with supporting artillery and mortar units. More detailed information can be obtained from the Fort Benning Installation Maintenance Office at AUTOVON 835-1166.

The digital message device can be removed from the mount and hand-held.

The slide mount allows the digital message device to be positioned between the radios.





Engineers from the 8th Infantry Division push their ribbon bridge 200 meters across the Rhine River using two 27-foot support boats. (Photo by SP4 Larry Burch)

Bridging the Gap

With the help of two CH-47 Chinook helicopters, soldiers of the 205th Aviation Battalion and Company E, 12th Engineer Battalion airlifted their raft sets to the Rhine River for a rapid river-crossing exercise. As part of this 8th Infantry Division operation, the Chinooks first supported an air assault to secure the near and far shores of the river. Then the helicopters lowered the raft sections (some weighing up to 14,000 pounds) into the water for assembly.

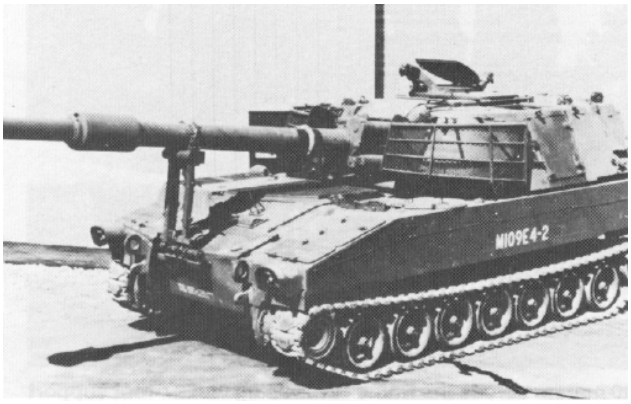
Once on the water, the engineers worked quickly to assemble the 10 bridge bays into two rafts. Operating under the watchful eye of the crews of two safety boats, the soldiers used six 27-foot combat support boats to build the rafts and to provide power to push them across the river.

The class-60 rafts are capable of safely carrying 60 tons. They can also be used to make a full bridge across a river.

At the end of the exercise, the engineers recovered the bridge bays using 5-ton trucks. The trucks were backed into the water until the rear wheels were almost submerged. Then to complete the operation, the bays were pulled aboard the trucks using a winch and carried away piggyback. (SP4 Larry Burch, 8th Infantry Division, Dexheim, West Germany)

The Ground Emplaced Mine Scattering System (GEMSS) is currently undergoing testing and evaluation at the Combat Systems Test Activity at Aberdeen Proving Ground. The GEMSS consists of the M128 ground vehicle mine dispenser and the M113 family of tracked vehicles or the M800 series 5-ton trucks, and is capable of dispensing antitank, antipersonnel, or mixed mines at predetermined ratios. In this photo a familiar surrogate vehicle does the job.

F-15 Eagles from the 318th Fighter Interceptor Squadron fly over Mount Ranier. The US Air Force plans to replace all of its F106s with F-15s in its air defense squadrons. (McDonnell Douglas Corporation photo)



M109E4-2

Getting HIP

The Department of the Army recently announced approval of the 155-mm self-propelled Howitzer Improvement Program (HIP). It will to be managed by the project manager for cannon artillery weapon systems and supported by researchers at the US Army Armament Research and Development Center, Dover, New Jersey. The decision to continue with the improvement of this weapon system marks a major turning point in artillery weapon systems development.

Work on the 155-mm HIP began in 1980 and has been the subject of an extraordinary effort. Initially, concepts to improve the 155-mm howitzer as well as new and foreign system alternatives were explored. Later, full-scale mockups—representing various configurations of the self-propelled howitzer—were developed and displayed at the Pentagon and other sites around the country.

The program is now in the full-scale engineering development phase. Significant improvements in the M109A5 self-propelled howitzer will be forthcoming as a result of this phase. Army experts say that the 155-mm howitzer will be improved in many areas including survivability; responsiveness; terminal effectiveness; and reliability, availability, and maintainability. In addition, this program will result in a major increase in the US Army Field Artillery capability through the 1990s.

Logistics Over the Shore

The largest peacetime logistics-over-the-shore (LOTS) exercise ever conducted occurred last fall at Fort Story, Virginia. Some 3,000 soldiers, sailors, and marines participated in a joint service test—JLOTS II—to determine what equipment and logistical procedures would be needed to conduct military operations in areas that have no fixed port facilities or deep draft piers. JLOTS II featured a variety of merchant marine and navy vessels as well as ship-to-shore lighters, landing craft, amphibious vehicles, portable causeways and piers, and special handling equipment for moving cargo over the beach and inland to marshalling yards for control and distribution.

The scenario featured a Navy-Marine amphibious assault and began in earnest with the arrival of follow-on supplies and equipment in the objective area which had no port facilities or deep draft piers. Navy and Marine units installed cargo-handling equipment and prepared for the discharge of a container ship, the *SS Export Leader,* and a breakbulk (palletized and loose cargo) ship, the *SS Cape Ann*. The *SS Export Leader* was moored to the *Keystone State*, one of the Navy's new crane ships, which used onboard cranes to move containers across its own deck and over the side to lighters. The lighters, landing craft, portable causeway sections, and amphibians then moved the containers to shore.

The exercise demonstrated the usefulness of the new auxiliary crane ship as a floating container pier. Another test involved the Army's Reverse Osmosis Water Purification Unit (ROWPU) which is designed to support forces in places where potable water is not immediately available. The system converts sea water to potable water. Mounted on a large barge, ROWPU units delivered 300,000 gallons of potable water during two 10-hour shifts daily.

During the latter part of the exercise, the Army was responsible for the LOTS operation and a sustained test of the LACV-30 air cushion vehicle, the temporary container discharge facility (a 60- by 150-foot barge mounting a 250-foot crane), and the "A" DeLong pier (a 300-foot-long, 80-foot wide, 13-foot-deep barge elevated on 10 6-foot-diameter caissons). Separate sections of the "A" DeLong pier are linked together to form a pier for direct discharge operations from deep draft ships. Using the air cushion vehicle, the 331st Transportation Company actually moved more containers during a 10-hour shift than any combination of lighters moved. During one shift, five of the LACVs moved 187 containers.

Another new concept tested during JLOTS II was the employment of a high-speed SL-7 container ship that had been converted under the Fast Logistic Ship Program (T-AKR). While the air cushion vehicles were conducting their ship-to-shore operations, the *USNS Cappela*, a T-AKR, arrived carrying helicopters as well as tracked and wheeled vehicles. The T-AKR is designed for both roll-on, roll-off and lift-on, lift-off operations. In a demonstration of those capabilities, Black Hawk, Chinook, Huey, and Cobra helicopters were moved to beach areas and the DeLong pier by landing craft.

The final phase of JLOTS II was spent exercising two Marine Corps maritime prepositioning ships (MPS). The purpose of the MPS vessels is to deploy in a forward area portion of the equipment, vehicles, supplies, petroleum, and potable water required by a Marine amphibious brigade and other military units that would be included in a rapid deployment force package.

Photo by Killeen, IX Daily Herald

Soldiers train in decontamination techniques.

Tough Paint

The Army is replacing the conventional lacquer-and enamel-type paints currently being used on all combat and combat support equipment to include tactical wheeled vehicles, aircraft, and essential ground support items.

The replacement paint is known as chemical agent resistant coating (CARC). It consists of an exterior top coat of polyurethane paint and an interior epoxy coat.

According to the Department of the Army, CARC must be applied to Army equipment as soon as possible. The conventional paints used to date soak up chemical and biological agents making it difficult to decontaminate equipment without completely removing the paint.

The thorough and compact catalytic structural bonding of polyurethane paint solves the problem. It is impervious to the chemical threat as well as to most biological agents. Moreover, its durable nature permits greater intervals between painting and touchups, reducing logistical support costs. All existing equipment contracts will be modified to ensure provisions for CARC painting.

Army Mortar Structure

The Army is revamping the mortar structure of its units. The 120-mm mortar will replace the 4.2-inch mortar in certain units, and the improved 81-mm mortar and the 60-mm lightweight company mortar system will be fielded to all light infantry battalions and companies in the light infantry, airborne, and air assault divisions. Based on a decision by the Chief of Staff, US Army, the mortar structure for US Army units will be as follows:

Type unit	Battalion level	Company level
Armor and mechanized infantry battalions (Modernized, J-series TOE)	Six 120-mm mortars	None
Mechanized and standard infantry battalions (H-series TOE)	Four 120-mm mortars	Three 181-mm mortars
Light infantry battalions and companies in the light infantry, airborne, and air assault divisions	Four 181-mm mortars	Two 60-mm mortars with crews
Ranger battalions	None	Two 60-mm mortars with crews
Armored cavalry squadrons	None	Three 120-mm mortars

"Generic" command post vehicle designed and built by US Army Human Engineering Laboratory will be used as a test bed to study command, control, and communications operations in nuclear and chemical battlefield environments. A self-sufficient onboard auxiliary power unit and an environmental control unit provide all the power and air conditioning necessary to maintain the vehicle's computer and electronic equipment.

The vehicle is designed for two modes of internal operations—12 to 24 hours with an open hatch and soldiers in protective clothing or 24 to 72 hours with hatches closed to the outside environment and with provision for onboard clean air ventilation.

Right by Piece

NOTES FROM UNITS

Redlegs show off their skills in the 1st Cavalry Division Artillery's semiannual Howitzer Section Evaluation.

The Big Voice of Garry Owen

FORT HOOD, TX—Redlegs from the 1st Battalion, 21st Field Artillery—"The Big Voice of Garry Owen"—recently had a chance to show off their skills as they made a clean sweep of the 1st Cavalry Division Artillery's semiannual Howitzer Section Evaluation. The First Team's 8-inch general support battalion was the honor battalion in an award ceremony where the division commander, Major General Michael J. Conrad, recognized distinguished sections (those scoring more than 950 out of a possible 1,000 points).

Staff Sergeant Barry L. Wise, 4th Section, Battery B, 1st Battalion, 21st Field Artillery received an Army Commendation Medal and the personal recognition of Major General Conrad for leading his section to the highest point total in the division artillery. Staff Sergeant Wise's section scored 987.3 points during a grueling evaluation marked by constant rain, cold, and mud.

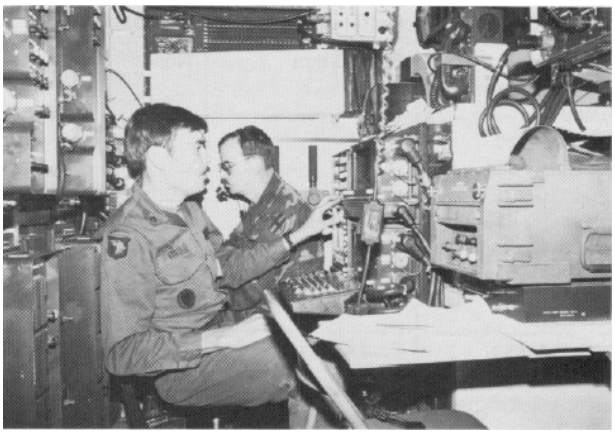
In similar fashion, the 1st Battalion, 21st Field Artillery led the rest of the division artillery by scoring the highest battalion average with 956.8 points, making it the only battalion to achieve distinguished status. Despite entering the smallest number of cannon sections, the Big Voice of Garry Owen had the highest number of distinguished sections. Also earning distinguished honors was the battalion ammunition section which scored 954.2 points.

Tackling Problems with TACFIRE

FORT STEWART, GA—Slow-motion was the name of the game at the Battle Simulation Center when Redlegs from the 24th Infantry Division Artillery played out a scenario to exercise their tactical fire direction system's (TACFIRE) capabilities. The recent exercise was conducted to identify battlefield problems while allowing a pause in the action to give the players a chance to correct the causes of unforeseen difficulties.

The artillerymen also had an opportunity at the Center not only to work on tactics, but also to work on how division artillery forces would be employed in a variety of operational areas. Specifically, the Redlegs used models ranging from desert, jungle, and arctic environments.

The division artillery drew its scenarios from field exercises actually played at the division level. The scenarios were adapted to game boards. This allowed them to exercise TACFIRE and helped to unravel problems that had defied solution in the field. The emphasis was on exercising the command and control agencies and equipment. Along with saving the money spent on conducting actual field exercises, the simulated battles helped to establish priorities for and to reprogram subsequent TACFIRE training and procedures. In fact, many of the solutions worked out during the exercises have been used to revise the unit's TACFIRE standing operating procedures and to develop new TACFIRE programs. (Story by PFC Ed Hanler)



FORT STEWART, GA—Georgia National Guardsmen from the 1st Battalion, 230th Field Artillery, were the first Guardsmen to field the tactical fire direction system (TACFIRE). The three-month, six-phased fielding of TACFIRE within the 24th Infantry Division and its roundout brigade culminated in a week-long, live-fire field training exercise. Sergeant First Class Cleotis Lee (left) of the 1-230th Field Artillery operates the artillery computer console while Sergeant Roger Newton mans the communication control electronic switchboard. (Photo by SP4 Wanda Lea Torrey)

Best Wrench

FORT CARSON, CO—A 24-year-old Decatur, Illinois, native was recently given the title of "Best Wrench" in the 4th Infantry Division Artillery's first Mechanic of the Quarter competition.

Specialist 4 Gary Britton, Service Battery, 1st Battalion, 29th Field Artillery, was chosen as "Best Wrench" following his performance in answering soldier- and mechanic-related questions before a board of motor sergeants.

Britton's opponents included mechanics who represented the best from each of the division artillery's three other battalions. They also included a mechanic from both the headquarters and target acquisition batteries.

A tracked-vehicle mechanic, Britton has been in the service for 2 years. He also attended the wheeled-vehicle mechanic course at Fort Carson.

Britton commented that during the board there was a lot of emphasis on using manuals. He suggested studying the manuals in preparation for the next board.

According to Captain Larry Barttelbort, the battalion's Service Battery commander, the mechanic competition was started to provide an incentive for all division artillery mechanics to do their best. According to Captain Larry Barttelbort, "It is also a nice way to give recognition to soldiers who put out a lot of work and who are sometimes taken for granted."

Britton's achievement earned him a 4-day pass, lunch at the Officers Club with his commanding officer and supervisors, a certificate of achievement, and a rotating plaque.

Specialist 4 Gary Britton, right, of Service Battery, 1st Battalion, 29th Field Artillery, Fort Carson, Colorado was recently selected for the "Best Wrench" award in the 4th Infantry Division Artillery's first Mechanic of the Quarter Competition. He is shown here working on a jeep with his platoon sergeant, Staff Sergeant William Simpkins. (Photo by SP4 Barbara Sharp)

WUERZBURG, GERMANY—A 155-mm howitzer from Battery C, 2d Battalion, 39th Field Artillery, 3d Infantry Division, climbs onto a ribbon bridge constructed by a civilian support group from Karlsruhe, West Germany, during REFORGER's exercise Certain Fury. (Photo by SP4 T. L. Barton)

FORT RILEY, KS—Hamilton's cannoneers from the 1st Battalion, 5th Field Artillery, occupy a firing position during their 7-day Army Training and Evaluation Program (ARTEP). The most outstanding aspect of the ARTEP was that Hamilton's cannoneers became the first unit in the 1st Infantry Division Artillery, as well as one of the first in the Army, to meet and surpass the tactical fire direction system ARTEP standards for providing fire support. The 1st Battalion, 5th Field Artillery, met or surpassed ARTEP standards for 100 percent of the fire missions handed them. The ARTEP began with the 1-5th supporting a movement to contact by the 1-34th Armor. During the 7 days, there was a maneuver phase and then a live-fire phase for the artillery. Every aspect of the battalion operation was evaluated—battery defense; nuclear, biological, and chemical operations; mess operations; and tactical operation center operations. (1LT Kim E. Gorum)

Supporting the Nuclear Supporters

REDSTONE ARSENAL, AL—The 515th Ordnance has passed its nuclear weapons technical inspection, and it wasn't easy according to the commander who leads the company's 142 enlisted men and 14 officers. All Army units are inspected periodically, but few undergo as tough a nuclear weapons test as the 515th. The inspectors were particularly interested in the company's ability to support artillery firing in a tactical environment.

The company has enlisted nuclear weapons technicians, warrant officer nuclear maintenance supervisors, and other personnel with the ammunition specialties needed to provide resupply and support of missiles, artillery projectiles, and atomic demolition munitions.

Its tactical mission demands that it be 100 percent mobile in a field environment. The company, therefore, maintains a sizeable fleet of transport trucks and other vehicles.

About once a year, the company travels in convoy to Texas to train with artillery units. The 515th also assists the Ordnance Missile and Munitions Center and School in teaching the officer basic course and has operational control of the Nuclear Weapons Support Detachment which supports the School and the National Guard. As a contingency force, the 515th is on call to the US Army Forces Command. (Story and photos by Ed Peters)

SP4 Goins and SP5 Turner demonstrate a calibration technique used in nuclear weapons maintenance.

An Artilleryman's VIP Tour of Italy

WUERZBURG, GERMANY—Soldiers of the 1st Battalion, 10th Field Artillery, 3d Infantry Division, had a rare training opportunity recently. A 33-man group joined their Allies for training exercises in Italy.

Upon landing in Sardinia, Italy, via C-130 cargo aircraft, the American Redlegs were met by members of the Italian Army and escorted to the largest live-fire training area in Italy. There they participated with their Italian counterparts in a joint field maneuver.

One particularly noteworthy event during the island visit was the live-firing of the Italian M-109 short tube howitzer. In all, the Americans fired approximately 70 rounds in the manual mode.

Once this initial phase of the maneuver was over, there was still time for a bit of rest and relaxation as the Americans joined their hosts from Le Batterie A Cavallo for a sightseeing tour of the city of Milano. Moreover, the soldiers had the chance to compete in various sporting events such as soccer and volleyball. There was even time to challenge the Italian soldiers on an obstacle course.

Then it was back to the range where the soldiers fired various handguns, rifles, and machine guns.

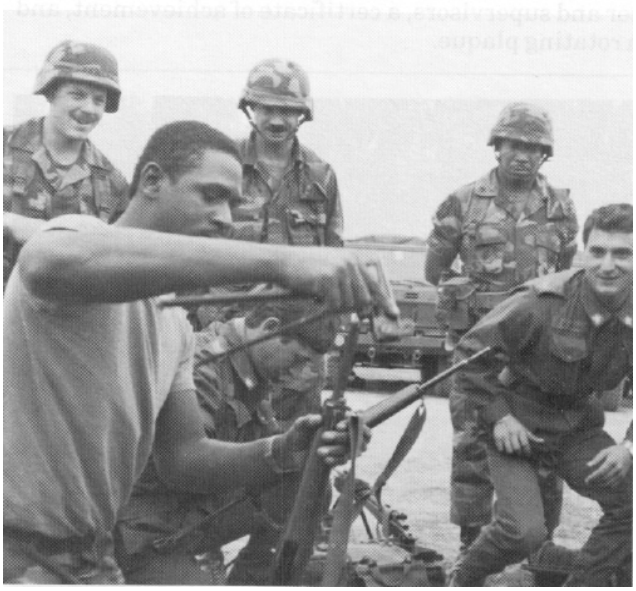


Photo by ILT James L. Davis

Soldiers of Battery B 1-10 Field Artillery compete in a rapid assembly rifle contest.

The trip was a valuable learning experience for troops and officers alike, and the group was able to lay a few more 'building blocks' in the structure of friendship between the 1-10th and their Italian neighbors. (SGT Larry D. Byerly, Sr.)

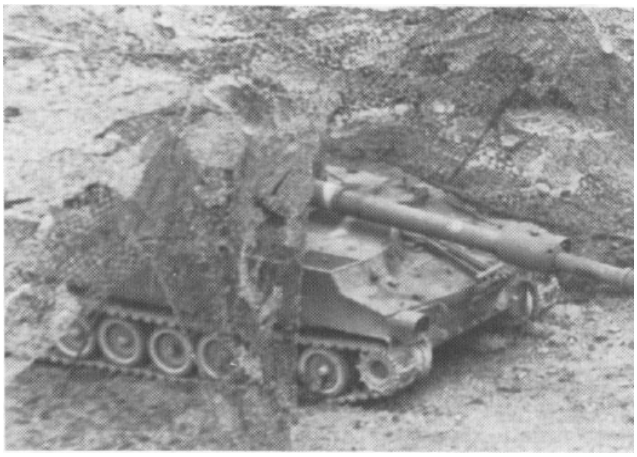
Desert Raider

FORT BENNING, GA—Soldiers of the 2d Battalion, 10th Field Artillery, along with other elements of the 197th Infantry Brigade, moved by air, rail, and truck some 2,800 miles from Fort Benning, Georgia, to the National Training Center (NTC) at Fort Irwin, California, for exercise Desert Raider.

The maneuver elements of the task force were from the 3d Battalion, 7th Infantry, and the 2d Battalion, 69th Armor. The task force also had elements attached from Fort Rucker, Alabama, and Fort Bliss, Texas.

At the National Training Center, the training units were required to go through a series of equipment draws because the brigade elements were limited in the number of organic vehicles they could bring along. After several days of climatization to allow the soldiers to tolerate the 105° temperature, the brigade deployed to the training area. The NTC, which is the size of the state of Rhode Island, consists of a series of high desert plateaus and wastelands with very sparse vegetation. The expanse of the area allows for the simultaneous deployment of two task forces with very few restrictions.

The training scenario required the task force commander to maneuver his forces or defend against the NTC's resident opposing force (OPFOR). The task forces also conducted live-fire exercises while in the defense and during an attack.



A gun position of Battery A, 2d Battalion, 10th Field Artillery, at the National Training Center during exercise Desert Raider. (Photo by CPT George D. Lennon)

During realistic combat situations, the task force was observed by controllers both on the ground and through a series of remote controlled video cameras. After the completion of each combat activity, the force command element underwent an extensive after-action review. The immediate critique was one of the chief benefits of the training.

The task force elements concluded Desert Raider with a redeployment back to the cantonment area where they prepared for their return to Fort Benning.

FORT CAMPBELL, KY—Soldiers in the 2d Battalion, 31st Field Artillery have accomplished what has been called the unit's most significant dual deployment in years.

Along with other Fort Campbell soldiers, the Redlegs of Battery B recently headed for the Combat Developments Experimentation Center at Fort Hunter-Liggett, California. Battery personnel took two 155-mm howitzers to fire the Copperhead artillery round for the first time. Moreover, they tested the Army's newest version of the OH58D scout helicopter. This remarkable air frame has systems allowing pilots to designate targets with on-board lasers for Hell-fire missiles and "smart" Copperheads.

The remaining batteries of the 2-31st deployed to Fort McCoy, Wisconsin, for exercise Snow Guns '85. The units took part in two field training exercises and trained on winter warfare skills including snow shoeing and cross country skiing. (Story by SP4 William F. Powell)

Getting There Fastest with the Mostest

FORT CAMPBELL, KY—The essence of battle is to be at the right place at the right time with the right people and equipment. The key to moving the field artillery where it can effectively fight has always been its prime movers—be they mules, trucks, or helicopters. Although the 101st Airborne Division (Air Assault) is fortunate to have a tremendous helicopter lift capability to move quickly into battle; the tactical and logistical transportation requirements will soon overwhelm available assets. Therefore, it is up to Redlegs and those they support to devise innovative means to maximize the use of their new and better equipment. Like all good ideas; such problem-solving techniques evolve through trial and error. The problem of the soldiers in the 101st is simple to state: If we are required to conduct a raid, battery move, or flank displacement given present support unit capability, what is the fastest, safest, and most tactically feasible method to transport M102s externally by CH47D helicopters?

An Unacceptable Option

Previous methods for slingloading the M102 howitzer neither maximized the lift capability of the CH47D nor optimized survivability during cross forward line of own troops (FLOT) operations. The major drawbacks to these methods were that they did not:

- Maximize aircraft speed.
- Provide for load stability.
- Provide for aircraft maneuverability.

All CH47 models except the "D" model allow only a single point hook-up at any external load. A single point hook-up produces an inherently unstable load which rotates at the point of hook-up. Moreover, if the aircraft flies at speeds in excess of 70 knots, the load often spins and oscillates. This makes it difficult for the aircraft to take evasive actions in the event of enemy attack.

In addition to the instability associated with this rigging, it also underuses the CH47D's lift capacity. A single M102 weighs 3,338 pounds; the CH47D can carry up to 26,000 pounds.

The Solutions

During April 1984, the Bulls of Battery B, 1st Battalion, 321st Field Artillery "Top Guns" and the "Press On" flyers of the 159th Aviation Battalion combined their resources, knowledge, and experience to develop a dual M102 tandem slingload technique for the CH47D. The resulting external slingload is now the standard throughout the 101st Airborne Division Artillery (Air Assault).

The CH47D has three cargo hooks allowing loads to be air-transported more efficiently in a tandem configuration using the fore and aft cargo hooks. The advantages of this two point hook-up scheme are significant.

- It is stable.
- It will not spin.
- Its oscillation is minimal.
- It can be placed in the azimuth of fire at the landing zone (LZ).

Although the US Army Airborne Board, the Military Traffic Command, and the Transportation Engineering Agency have certified only one M102 tandem slingload configuration, the 101st Airborne Division Artillery has developed two dual, tandem techniques.

The Piggyback Technique

The piggyback technique shown in figure 1 features one howitzer attached in tandem to a CH47D and another howitzer slung underneath that howitzer in a tandem hook-up configuration. A CH47D carrying this load can travel at speeds in excess of 140 knots and take 60° banks. The payoff in survivability for both the CH47D and the howitzers is tremendous. However, there are problems in picking up and landing the load. The pilot has to take great care to ensure that the howitzers do not collide. This factor can lead to excessive pickup and landing zone times. The piggyback method may also put the aircraft above the treeline; this may result in an unacceptable highly-visual silhouetting of the helicopter. These reasons made this method unacceptable.

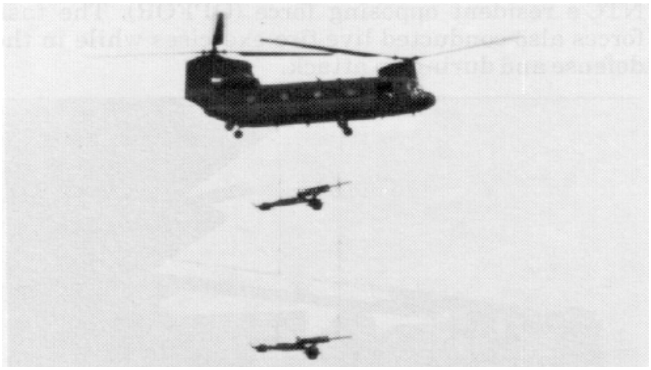


Figure 1. The piggyback technique—two M102 howitzers in a tandem hook-up configuration.

The Side-By-Side Technique

The side-by-side configuration shown in figure 2 features two howitzers slung with the following materials:

- Five 10,000 pound chain legs.
- Two 10,000 pound apexes.
- Two chock blocks.
- Two CGU-1B ratchet straps.
- One-quarter inch cotton webbing.

A 10,000 pound chain leg is attached to each tube lifting bracket using a link count of 56. They are then joined together in one 10,000 pound apex. Two 10,000 pound chain legs are attached to the outer lifting bracket on the trails of the two howitzers with a link count of three. One chain leg is interwoven between the two inner trail lifting brackets with a link count of

Figure 2. Two M102 howitzers slung side-by-side.

five. Chock blocks are placed between the two inner wheels of the howitzers and between the howitzers where the trails meet. This final precaution prevents metal-to-metal contact. The howitzers are then fastened together with CGU-1B ratchet straps. In this configuration a CH47D can take 60° banks and travel at speeds of 140 knots while maintaining a low silhouette.

The load is extremely stable, and oscillation is minimal. The side-by-side load is considerably easier to rig, pick up, and land than the piggyback load discussed below. In fact, rigging takes only 10 minutes.

The major problem with this method is that, if the howitzers must fire as soon as they hit the landing zone, they must first be separated. If the terrain is solid and not too rugged, the basic Army Training and Evaluation Program (ARTEP) standard of 4 minutes for laying the howitzers is achievable, but if the ground is muddy or covered with snow it is extremely difficult to meet the standard. ARTEP standards are totally conditional. Under adverse weather conditions ground prime movers may still be in the old firing position after the artillery air assault has already conducted a successful mission.

Conclusion

The side-by-side tandem slingloads perfected by the 101st Airborne Division improve the efficiency of the aviation-field artillery team by:

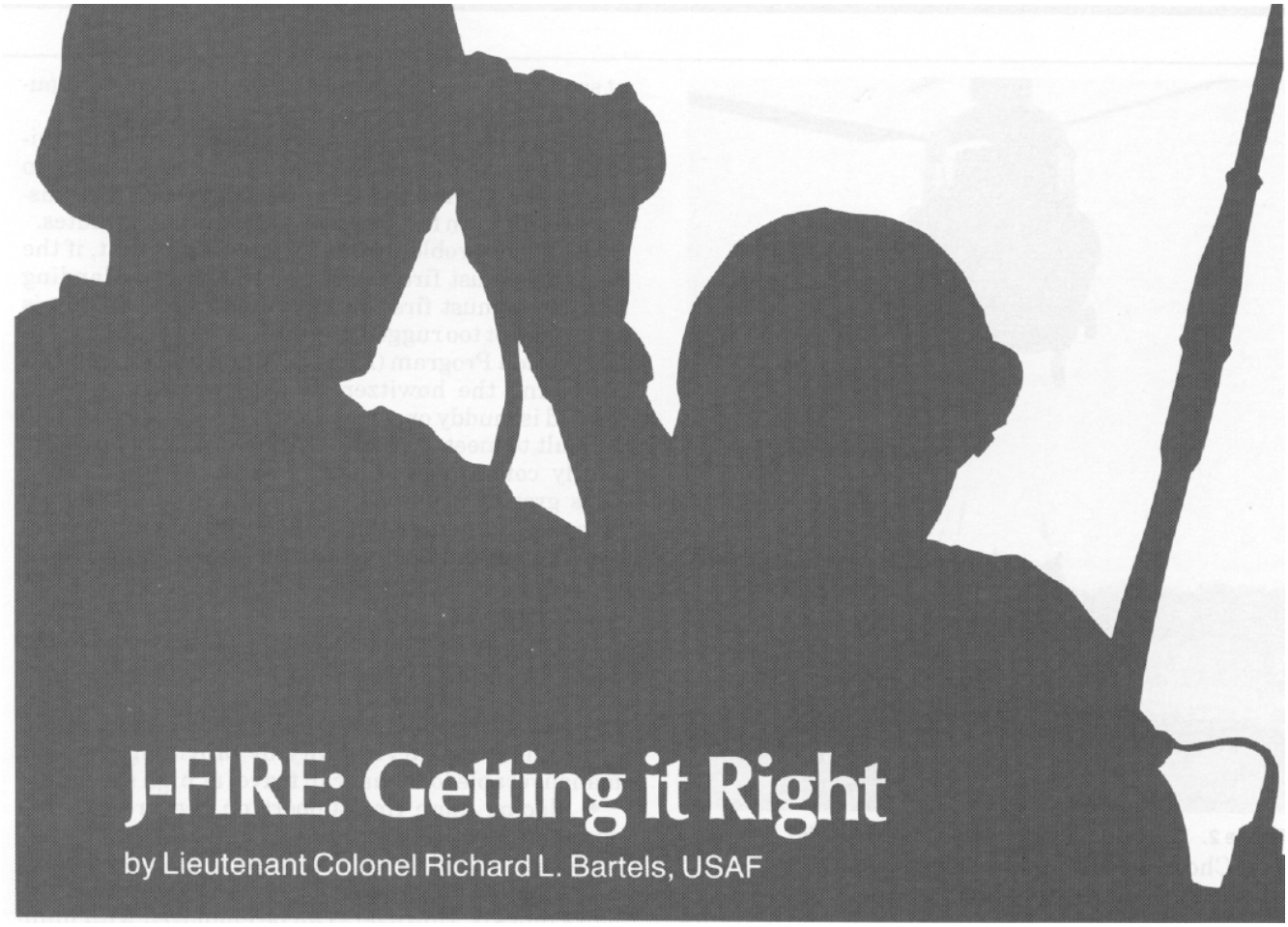
- Exploiting the CH47D's tremendous lift capacity.
- Enhancing survivability by providing a stable, maneuverable load that can travel at high speeds.
- Placing more fire support on the ground in a shorter period of time.

The additional speed and maneuverability gained over single point slingloads enable light artillery to move quickly. Howitzers can be employed with minimum difficulty and can meet the demands of the quick pace of the AirLand Battlefield. (Story by COL Frederic H. Stubbs and CPT John L. Churchill)

On Target, on Time

CAMP ROBINSON, AR—The field artillery was well represented at the 1984 Winston P. Wilson National Guard rifle, pistol, and light machine gun championships held at Camp Robinson, Little Rock, Arkansas from 9-15 September 1984. The 2d Battalion, 218th Field Artillery, from Portland, Oregon, fielded both the combat rifle and combat pistol teams for the state of Oregon. The competition featured 44 teams from throughout the United States, the Virgin Islands, Puerto Rico, and Guam. The 2-218th's rifle team took 5th place in the Trophy Rifle Team Course (M16), 11th in the Combined Rifle Team Championship (M16), and 15th in the Precision Combat Rifle Team Match (M16). Individual honors went to Sergeant First Class Larry W. Nodurft with 220 points and Second Lieutenant Mark J. Olson with 211 points. Out of 245 shooters, Sergeant First Class Larry Nodurft placed 10th; Second Lieutenant Mark Olson, 13th; Sergeant Roger Grimsrud, 27th; and Sergeant First Class Kenny Dean, 46th. Staff Sergeant Tom Foley placed 9th in the 100-yard sustained fire standing match and Sergeant Roger Grimsrud placed 8th in the 400-yard slow fire prone match.

"On Target, on Time" rifle team members from the Portland Light Artillery are CPT John P. Jones, CPT Paul J. Gruelle, 1LT Edward R. Ward, 2LT Mark J. Olson, 2LT Geoffrey G. Liljenwall, SFC Larry W. Nodurft, SFC Kenny R. Dean, SSG Thomas C. Foley, SSG Rodney J. Knepper, SGT Roger A. Grimsrud, and SP4 William P. Geske.



J-FIRE: Getting it Right

by Lieutenant Colonel Richard L. Bartels, USAF

As a result of the lessons learned in Operation Urgent Fury, the Joint Actions Steering Committee composed of the Tactical Air Command (TAC) Deputy Chief of Staff for Plans and the US Army Training and Doctrine Command (TRADOC) Deputy Chief of Staff for Doctrine tasked the AirLand Forces Application Agency (ALFA) to examine the need for a single-source, joint fire support handbook, incorporating current service doctrine and procedures. Urgent Fury reports indicated problems in the areas of close air support, naval gunfire support, and joint training. A single-source document intended for field use may have prevented these problems. No other single-source document exists to address these problems.

In March of last year the Joint Application of Firepower (J-FIRE) Program was approved, and ALFA began to develop the quick reference guide on the joint application of firepower.

Three joint working groups, consisting of the Navy, Marine Corps, US Readiness Command, TAC, and TRADOC have combined efforts to develop and refine a handbook to be distributed worldwide.

During the joint working group, action officers from the four services continued to emphasize that the document must be designed for use by tactical forces in the field. The document was not designed for staff planning or for use as a teaching guide for schools. Moreover, the purpose of the J-FIRE program was not to revise doctrine or procedures, but to consolidate existing procedures into a format that would be easily used in the field. Thus, the guide is pocket-sized and weatherproof. Its users—tactical air control parties, forward air controllers, air and naval gunfire liaison company (ANGLICO) and fire support teams, company commanders, platoon and squad leaders, and forward observers—can mark on it with grease pencil.

The J-FIRE guide has chapters dealing with communications systems, communications planning, fire support request formats, weapons and ordnance capabilities, and liaison elements. Here are a few examples of draft pages from the J-FIRE Quick Reference Guide:

SECTION II—COMMUNICATIONS
GENERAL

SUPPORTING ARMS COMMUNICATIONS

Fire Support	Radio	Agencies	Net Nomenclature
Naval Gunfire	HF	Observer to Ship	NGF Ground Spot Net
Army/Mortar	VHF/FM	Observer to Artillery Mortars	Conduct of Fire (USMC) Fire Direction/Fire Control (Army)

CAS Request: (USN/USMC)	HF	TACP to DASC TACC	Tactical Air Request Net (USMC/USN)
CAS Request: (USAF)	HF	TACP to ASOC	Air Request Net (USAF)
CAS Control: (USN/USMC/USAF)	UHF	FAC to Aircraft	Tactical Air Direction Net

NOTE: Pages 2-1 through 2-4 contain a supporting arms communications guide. Also provided is a list of compatible communications equipment by type of fire support requested.

ARTILLERY/MORTAR CALL FOR FIRE

1. (Observer ID). "_____ This is _____

2. (Warning Order) " _____ Fire Mission (Type)_____
3. (Location of Target-Select Appropriate Method)

Grid Coordinate

"GRID_____ "

"DIRECTION _____ " (Mils)
(Send After Message to Observer)

Polar Plot

"DIRECTION _____ " (Mils)

"DISTANCE _____ " (Meters)

"UP/DOWN _____ " (Meters)

Shift From Known Point

"SHIFT (Tgt/Reg Pt No)_____ "

"DIRECTION _____ " (Mils)

"ADD/DROP_____ " (Vertical Shift)

"UP/DOWN _____ (Meters)

4. (Target Description) " _____

5. (Method of Engagement)

A. (Type of Engagement) "_____

B. (Trajectory) " _____

C. (Ammo) " _____

D. (Distribution of Fire) "_____

6. (Method of Fire and Control) " _____

MESSAGE TO OBSERVER

Units to Fire _____

Changes to Call for Fire _____

Number of Rounds _____

An additional goal in the J-FIRE project was to standardize the close air support pilot briefing format from all services. Up to now, each service used a different format with some formats varying between theaters. Here is a draft format that maybe used by all services:

CAS BRIEF

(Given to the Fighters)

(Fighter Call Sign) THIS IS _____ (Your Call Sign)_____CAS BRIEFING AS FOLLOWS:

1. Initial Point (IP) _____

2. Heading (IP to Target [TGT])_____(Magnetic) (Offset L/R)

3. Distance (IP to TGT) _____(Nautical Miles)

4. Target Elevation _____ (Feet-Mean Sea Level)

5. Target Description _____

6. Target Location _____ (LATitude/LONGitude or UTM/OFFSETS/VISUAL)

7. Type of Mark _____Code _____(WP Smoke, Beacon, LASER)

8. Location of Friendlies _____

9. Egress _____

Remarks _____

(Time on TGT)" TOT_____ or

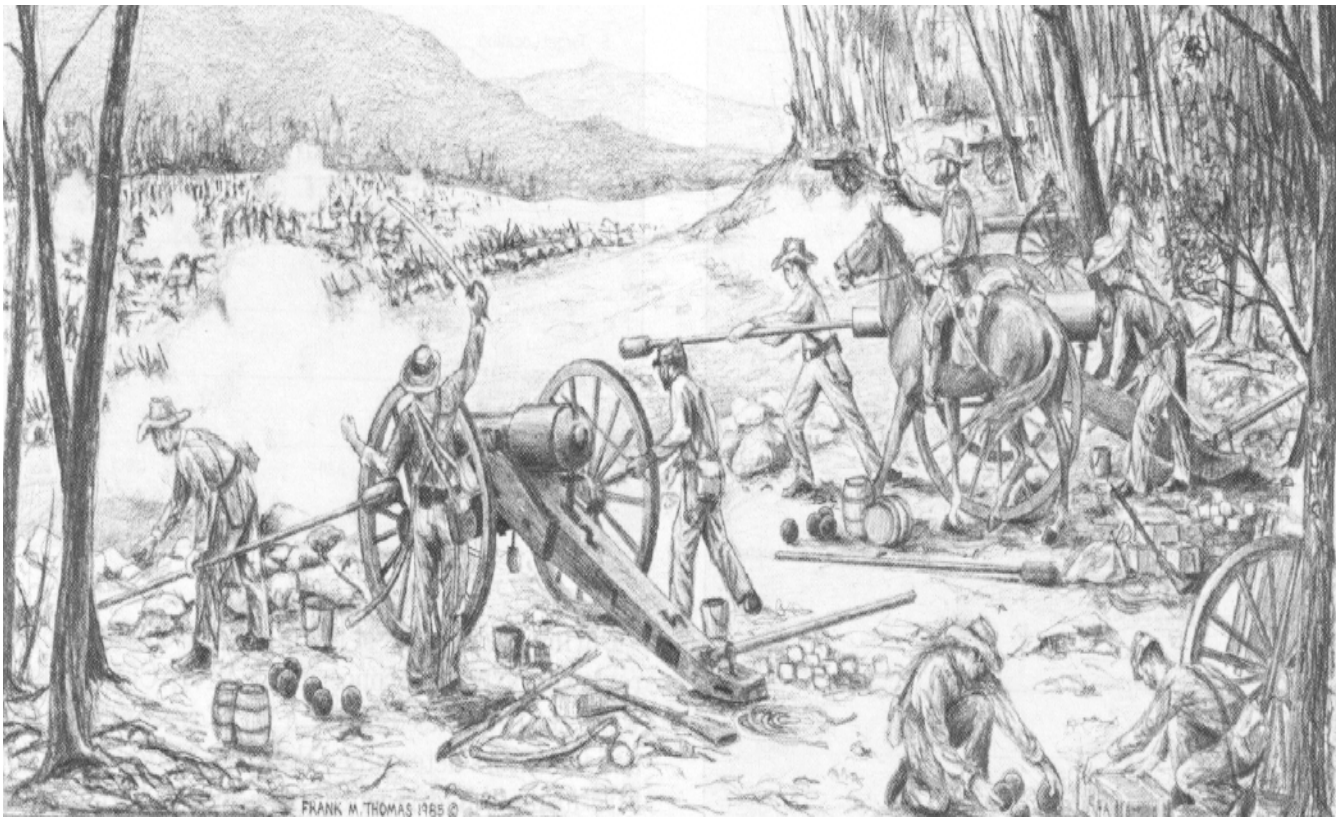
(Time to TGT)" Standby _____ + _____ Hack

(min) (sec)

During the staffing of the J-FIRE document, some reviewers expressed concern that JINTACCS formats were not being used. After a lot of research, ALFA action officers determined that the J-FIRE Calls for Fire formats had recently been dropped from JINTACCS. The joint work group agreed that since J-FIRE consists of service-approved procedures, JINTACCS formats should be produced based upon those procedures. Action is being taken to have those formats provided in the future.

The AirLand Forces Application Agency feels that the J-FIRE pamphlet fills the need for a single-source, joint fire support quick reference guide to be used by the troops in the trenches. J-FIRE will provide a significant increase in our capability to *train* and *fight jointly*.

Lieutenant Colonel Richard L. Bartels, USAF, is assigned to Operations at the Air Land Forces Application Agency, Langley Air Force Base, Virginia. He received his commission through ROTC at Penn State University and earned a master's degree from Central Michigan University. Lieutenant Colonel Bartels is a graduate of the Squadron Officer School, Air Command and Staff College, and the Industrial College of the Armed Forces. His past assignments include action officer for the Tactical Air Command, division air liaison officer for the 25th Infantry Division, and fighter pilot.



Artillery Well Handled

by Captain John C. Whatley

When it comes to arguments about the power of artillery in defensive operations, few battles can match the one fought at Spotsylvania on 28 May 1864. General U. S. Grant and his Union troops fought through The Wilderness against Robert E. Lee's Confederates and arrived at Spotsylvania. These Union and Confederate troops engaged in the Battle of Bloody Angle, a furious fight for a bulge in the Confederate lines called the "Mule Shoe." At the end of the fight the Confederates withdrew to new entrenchments some 800 yards to their rear.

After several days of maneuvering in front of the Confederate positions, most of them during torrential rainfalls, Grant had accomplished little. General Grant moved troops from his right to his left, but General Lee countered by moving his troops across the Union interior lines from left to right. General Horatio Wright believed Lee's moves had weakened the Confederate left and proposed an attack to Grant. According to Wright, fresh Union troops should launch the attack through the old Mule Shoe position straight at the entrenched Confederates. General W. S. Hancock's troops along with those of Wright would reoccupy the abandoned Mule Shoe position during the night of May 17th. At dawn on the 18th, supported by General A. P. Burnside's diversionary attack to their left, Hancock and Wright would attack the new Confederate works. Any success would be exploited by General G. K. Warren's troops in reserve. Grant liked the plan.

General R. S. Ewell's troops held the Confederate left. They had been in position in their new trenches for 6 days and had had ample opportunity to improve them. The position was naturally camouflaged by the forest. Good fields of fire had been cleared. Heavy abatis had been placed to the front of infantry positions. To get to these new Confederate trenches the Union troops would have to charge across a half mile of open, gently rising terrain. They would also have to contend with the 29 guns of Colonel T. H. Carter's division of artillery dug in behind the Confederate infantry.

Early on the morning of the 18th, the Union troops moved through the Mule Shoe. But the leading divisions took too long and it was 8 a.m.—not dawn—before they were ready to attack. It was getting so light that the attack was launched before units in the rear were in position.

The Confederates had finished their simple breakfast and were standing around awaiting the events of the day. Ewell's Confederates had been alerted early that an attack would probably be launched at them. The Union preparations the day before had been discovered by the Confederate cavalry

and observers in the belfry in Spotsylvania. It was, therefore, no surprise when Unionists were discovered in their front preparing to attack.

Colonel W. E. Cutshaw, commander of a battalion of the artillery on the Confederate line said he, "could not believe a serious attempt would be made to assail such a line as Ewell had, in open day, over such a distance. Everyone on the Confederate side felt that such an attack was reckless and hopeless in the extreme. So when it was found that a real assault was to be made, it was welcomed by the Confederates as an opportunity to pay off old scores."

The Union artillery posted in the first line of works opened a covering fire. Under this fire the Union infantry moved out rapidly. One observer described it as follows: "several brigades deep, well aligned and steady, without bands, but with flags flying, a most magnificent and thrilling sight, covering Ewell's whole front as far as could be seen."

The Confederate gunners held their fire. But when the blue line came well within range, the Confederate artillery opened with solid shot and shells. This changed to case and canister when the Unionists charged at the double quick. "On they came," Cutshaw remembered, "shells and case (shrapnel) shot tearing great gaps in their ranks, the roaring guns and wavering lines of Federal infantry still advancing, the scene was wonderfully inspiring to the Confederates."

The blue line, despite mounting losses, continued to press forward until the Union soldiers arrived at the edge of the abatis. There, well within canister range, the attack halted. Some units still tried to move forward; others tried to tear away the abatis. The Confederate artillery, however, was firing so fast that walls of steel met every movement. The outcome of the attack was now no longer in doubt. The Confederate gunners had the range and continued with canister at close range. The Union lines wavered, then broke and fled in confusion. The front lines were completely routed and fell back on supporting units. For most Union soldiers it was a disorderly retreat into the woods at their rear.

By 10 a.m. the attack was over. As the Unionists fled out of range, the Confederate artillery fell silent to conserve ammunition. The Union artillery continued its counterbattery fire for a time, but it caused no damage and finally stopped.

The cheering Confederate infantry this time had been mere spectators; the artillery alone had repulsed the Union attack. Although there were no casualty reports for this engagement, one Confederate report termed Grants loss as "very heavy; ours was nothing." The official reports credit the Confederate artillery fire for the Union loss. "The repulse of the heavy assaulting columns of the enemy," Cutshaw concluded, "was practically by the destructive fire of artillery alone. . . . This mass of infantry charging . . . in the face of intrenched, well-posted, and well-served artillery, could not hope to carry such a position as Ewell's Corps held."

"This attack fairly illustrates the immense power of artillery well handled," reported General A. L. Long, Ewell's Chief of Artillery. "A select force of 10,000 or 12,000 infantry was broken and driven from the field in less than 30 minutes by 29 pieces of artillery alone."

Captain John C. Whatley is the Public Affairs Officer of the Georgia Guard's 48th Infantry Brigade (Mechanized), roundout brigade to the Active Army's 24th Infantry Division (Mechanized) at Fort Stewart, Georgia. He edits the unit newsmagazine, *The 48th Brigade Review*, which has won several military awards, including 1st Place Magazines, 1st Army. He is a graduate of the Artillery Officers' Basic Course at Fort Sill and the Defense Information School at Fort Benjamin Harrison. Captain Whatley served his active duty time in Europe with the 8th Division Artillery in Baumholder. He has a juris doctorate and is a member of the Georgia Bar.

Command Update

NEW REDLEG COMMANDERS

Active Army

COL Billy T. Brooks
1st Cavalry Division Artillery

COL Donald M. Moore
4th Infantry Division Artillery

COL Columbus M. Womble
8th Infantry Division Artillery

COL Richard W. Wharton
82d Airborne Division Artillery

COL James E. Tindall
18th Field Artillery Brigade (Airborne)

COL Roger A. Brown
42d Field Artillery Brigade

COL Michael W. Keaveney
75th Field Artillery Brigade

COL Gerald R. Lauzon
214th Field Artillery Brigade

LTC Paul Treolo, Jr.
2d Battalion, 2d Field Artillery

LTC Cordis B. Colburn
7th Battalion, 8th Field Artillery

LTC Thomas J. Cannava
1st Battalion, 10th Field Artillery

LTC Thomas T. Frazier
1st Battalion, 11th Field Artillery

LTC Bruce R. Kerwin
2d Battalion, 11th Field Artillery

LTC Roger C. Fiske
1st Battalion, 15th Field Artillery

LTC Kenny J. Jefferson
2d Battalion, 17th Field Artillery

LTC Grover M. Ford
1st Battalion, 21st Field Artillery

LTC John M. McKenna
3d Battalion, 29th Field Artillery

LTC LeRoy B. Outlaw
1st Battalion, 30th Field Artillery

LTC Kenneth W. Northamer
2d Battalion, 31st Field Artillery

LTC Alvin L. Ginsberg
2d Battalion, 34th Field Artillery

LTC Robert T. Tablak
3d Battalion, 34th Field Artillery

LTC George E. Newman, III
1st Battalion, 35th Field Artillery

LTC Larry D. Aaron
2d Battalion, 35th Field Artillery

LTC James R. Staats, Jr.
2d Battalion, 41st Field Artillery

LTC Robert C. Pinkerton
2d Battalion, 75th Field Artillery

LTC Eddy Smith
2d Battalion, 27th Field Artillery

LTC Jesse Peitchinsky
2d Battalion, 92d Field Artillery

LTC Joseph P. Monko, Jr.
2d Battalion, 320th Field Artillery

LTC Robert F. Kemp
2d Battalion, 321st Field Artillery

LTC Robert L. Testerman
8th Battalion, 8th Field Artillery

LTC Olin Hudson, Jr.
3d Battalion (BT), 1st Brigade

LTC Gilbert L. Bishop
5th Battalion (BT), 3d Brigade

Marine Corps Commanders

LtCol Alexander W. Powell
2d Battalion, 12th Marine Regiment

COL Hugh P. Pate
11th Marine Regiment

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