



Field Artillery Journal

November-December 1978



BULLETIN —
On 19 October, the Army System Acquisition Review Council approved full-scale production to equip the Active Army with the TACFIRE system.

Field Artillery Journal

the journal of fire support

Volume 46

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Number 6

The *Field Artillery Journal* is published bimonthly at the US Army Field Artillery School for the same purpose 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 powers and limitations as to the field artillery's progress, development, and best use in campaign; to cultivate, with the other arms, a common understanding of the powers 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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Front cover: 1LT Elizabeth A. Tourville, first woman commissioned in the Field Artillery (photo by Jimmy Hysaw).

Back cover: Two all-female artillery teams participated in studies conducted by the US Army Human Engineering Laboratory at Aberdeen Proving Ground, MD (photos by Gene Bonhage).

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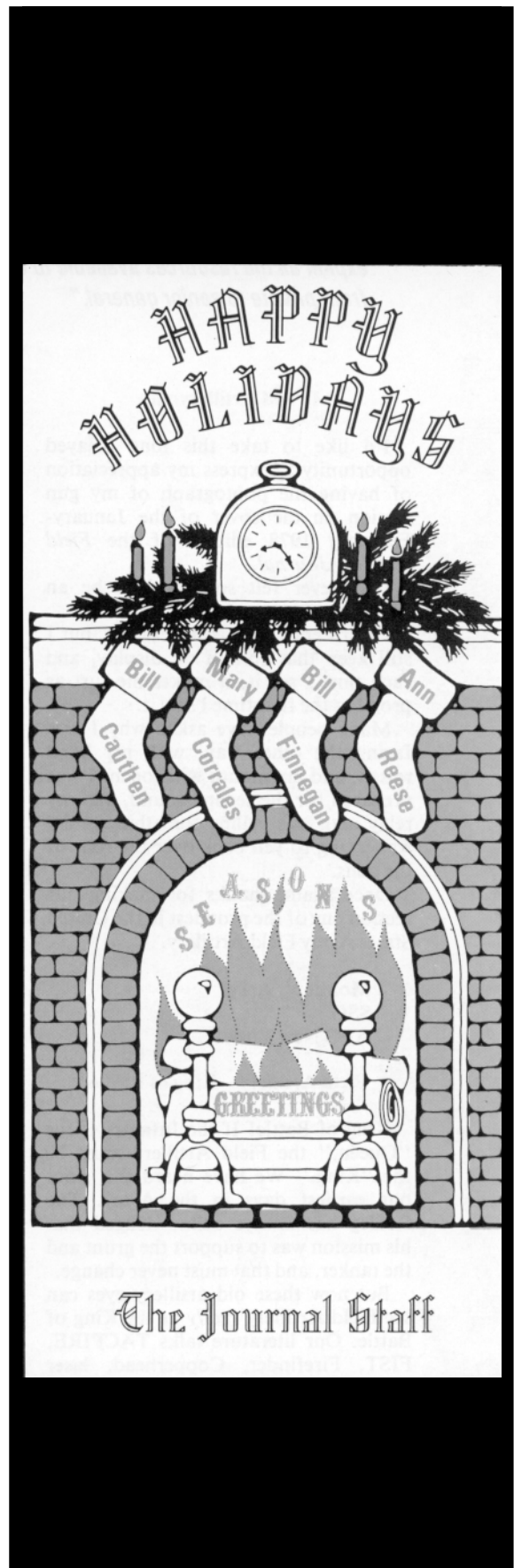
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letters to the editor

"There are improvements to be made in nearly everything we do, if we will but exploit all the resources available to us, including soliciting the ideas of all soldiers, from private to senior general." —GEN Bernard W. Rogers, 17 Aug 76

Proud Artilleryman

I'd like to take this long delayed opportunity to express my appreciation of having the photograph of my gun section on the cover of the January-February 1978 edition of the *Field Artillery Journal*.

I've never felt so proud to be an Artilleryman.

I've recently arrived in Europe, but I still keep that edition on display, and each time I see it, it makes me just as proud as the first time I saw it.

Many people have asked why I was facing the other way, with my hand raised, and my mouth wide open. I was prepared for the second round, and my relay man was yelling something and I was trying to yell back over the roar of the guns.

Once again, thanks for making our section one of the proudest in the United States Army Field Artillery.

Montie V. Arkel
SSG
APO New York

Field Artillery—King of Battle

King of Battle! If the Infantry is the "Queen," the Field Artillery must be the "King." We have heard this since our earliest days in the Army. The Redleg has always acknowledged that his mission was to support the grunt and the tanker, and that must never change.

But now these old artillery eyes can see Field Artillery *really* as the King of Battle. Our literature talks TACFIRE, FIST, Firefinder, Copperhead, laser designators, and GSRS. The general literature treats "fight outnumbered and win the first battle," high and growing personnel costs, cost effectiveness, life cycle cost, force multipliers, and many

others.

Force multipliers? Now there is a clever, meaningful term, referring to the sophisticated command, control, communications, and intelligence systems that permit commanders to tailor and concentrate the right force at the right place at the right time.

Field Artillery has been the greatest killer on the battlefield, at least since WW I, and modern technology has improved the kill capability by orders of magnitude. Today, the old artilleryman's fondest dream, first-round fire-for-effect, is a reality. TACFIRE and target-location equipment for the FIST make it so. Now we can hit the other guy with massed fires while his hatches are open and his infantry is in the most vulnerable position — standing.

Copperhead and the GLLD make another impossible dream come true. For the first time, single-piece indirect artillery fire can be brought to bear on individual tanks. Talk about force multipliers? Talk about cost effectiveness? We can shoot at and defeat tanks with virtual impunity (from the target tank itself). Now RPVs show promise of becoming super FOs — a force multiplier of a force multiplier.

But there is more — doing more than traditional field artillery missions with far greater effectiveness. The FA finds itself delivering antitank and antipersonnel mines; deep delivery of TV cameras is feasible; a myriad of intrusion detectors is in the basic load; etc., etc. The artillery is doing other-branch missions in a more timely, effective, and efficient manner than those missions were done previously. The time has come to acknowledge that Field Artillery *is* the King of Battle and to plan to optimize its capabilities. The restructured division is a first step in the right direction — more weapons per

division. GSRS is another — a real area/counterbattery capability, one backed up by Firefinder and other new target acquisition systems.

Remember when air power advocates convinced the public that they held the key to winning wars? Fortunately, brush fire affairs dispelled that myth before any real damage was done. Wars are won by tanks and infantry seizing, occupying, and holding ground. But modern Field Artillery has the capability of making that job far easier and achievable by far smaller maneuver forces.

The grunt and tanker will justifiably demand virtually instantaneous response. The Field Artillery will have to adopt automatic, computer-controlled, gun laying, fuze-setting, and loading. Ever-growing personnel costs must surely justify this, and maneuver arm requirements for responsiveness will demand it.

A letter in a recent *Field Artillery Journal* properly expressed concern about growing requirements for ammunition types to be carried by field artillery units. But the problem is not insurmountable. As requirements are added to FA by additions of ammunition types, so must they be reduced in other branches. Thus personnel and transportation will be available.

Wiser heads than this one will make the ultimate decisions and fight any ensuing charter battles. But these old eyes see potential for greater effectiveness at reduced cost through technology and a willingness to innovate. Can't artillery truly be the King of Battle? Think about it, ye wiser heads.

Edward J. Morgan
COL (Ret), FA, USAR
Cincinnati, OH

High on Hipshoot

Since joining the Field Artillery Association last year, I have enjoyed each issue of the *Journal*. It is a fine magazine and a real asset in providing our officers with new and sometimes controversial ideas and issues of our profession.

I was particularly glad to see the article in the September-October issue about the 2d Armored Division Artillery Hipshoot. From my standpoint, the training for and conduct of the hipshoot are highly productive in developing the artillery skills necessary in an armored division. In addition, unit esprit between the competing batteries and battalions achieves a real high throughout the entire affair.

I would like to correct one error in the Commanders' Update in your latest edition. The 1st Battalion, 3d Field Artillery, has not changed commanders. LTC William A. Spin is still its commander and will remain so for several months. The 1st Battalion, 14th Field Artillery, did change command on 5 September with LTC Manuel Lopez assuming that duty.

Keep up your good work.

Charles P. Graham
MG, USA
Fort Hood, TX

Thank you for your complimentary remarks and for correcting the listings in "Commanders Update." The changes in programed command shifts took place after that issue went to press. Information in "Commanders Update" is a projection of command changes forecast to occur during the months shown on the cover of each Journal.—Ed.

So, what's new?

Enjoyed the article "Enhancing Combined Arms Training" (July-August 1978 *Journal*), wherein FOs actually accompany supported troops in an exercise, prepare fire plans, and have fires marked by flag umpires. A real breakthrough in training for sure — we were doing that in Louisiana maneuvers in 1941, and at Camp Polk in 1943 we fired live rounds in support of an armored

infantry tank exercise. But someone's on the right track, for the incidents cited in the article of FOs commanding assault troops, being left out of the supported commander's planning conferences, and failure to anticipate communication problems, all sound like a repeat of maneuvers I participated in some 35 years ago. And

the FO leading assault troops has happened more than once in battle. So there's no reason why it shouldn't turn out to be an excellent training device; it always has been.

George Ruhlen
MG (Ret), USA
San Antonio, TX

Parting tribute

During the past 24 years I have had a very deep love affair with a beautiful lady, the Field Artillery.

I have decided to "stack arms" and retire. It was the hardest decision I ever had to make. I am sending you this small poem in hopes you will print it in your fine magazine.

Farewell to Redlegs

**They say life passes quickly
When you're having fun—
Or sleep in the mud 'Tween
the trails of a gun.**

**There's truth in those
words, I know what I say—
But the best words of all
Are "Ready for lay."**

**Now "Ready for lay" To
you grunts and you tanks—
Is the strange language
spoken In Artillery ranks.**

**But Artillery is meant For
the young and the brave—
To the roar and the smoke
You soon are a slave.**

**I cursed you and blessed
you I felt that great thrill—
As I adjusted your rounds
From a cold, windy hill.**

**I lived in the mud The dust,
and the heat—
Been hungry and cold And
dead on my feet.**

**I spoke of you boasting
While drinking my beer—
And walked my post
proudly While guarding
your rear.**

**From the em one oh seven To
the seventy-five pack—
I shifted your trails, And
adjusted your track.**

**I primed you and fired you,
Seen your vent reamed—
Seen the swab in your tube
Turn to live steam.**

**Seen enemy dead In front of
your tube—
Heard your slides screaming
For want of a lube.**

**But we kept right on firing
For our comrades in arms—
And asked dear Saint
Barbara To keep us from
harm.**

**Now my eyes have grown
dim, My hearing has gone—
And now Field Artillery It's
time to move on.**

**May God grant me this wish
Before I am through—
May I be loved and respected
As I have done you.**

**And as for my grave, One
place would seem fit—
To be buried in "Graf" In a
high-angle pit.**

Charles O. Mattson
1SG, USA
B/1-27th Field Artillery
Fort Carson, CO

Incoming

Space for our "comrades"

Why don't we Field Artillerymen offer the Infantry and Armor a page in our *Journal* on a recurring basis? If combined arms and integrated fire support are essential for success on the battlefield, maybe we should foster this relationship in our professional journals.

David L. Whitling
MAJ, FA
Fort Leavenworth, KS

The Journal (as well as ARMOR and Infantry) welcomes input from members of branches other than our own. Several years ago the Editor of Infantry wrote a very good article for us on the unique relationship between his branch and ours. Just recently ARMOR and Infantry exchanged articles debating the future of mechanized infantry.

We currently publish a multipage feature titled "Comrades in Arms" in each issue of the Journal to provide news of our combat arms partners and our fire support comrades, the Marines, USN, and USAF. Of course, the letters to the editor section ("Incoming") is open to anyone to write on any pertinent subject.

Any tankers or infantrymen out there have something to send us?—Ed.

Scan Shell elaboration

I was very pleased to note Lieutenant Colonel Rees' letter (July-August 1978 *FA Journal*) concerning my Scan Shell article. Responding to his suggestion to apply the Scan Shell concept to a rocket, several points not made clear in the article are involved:

- In a conventional infrared scanner, such as the one used in aircraft and one that would apply to a rocket vehicle, the rotating mirror head is a very expensive and fragile component. In the Scan Shell, the normal spin of a conventional cannon projectile avoids any such moving part; therefore, construction would be simpler, cheaper, and more rugged than a projectile for a rocket.

- The Scan Shell would require one more type of ammunition to be carried, but would not require a whole other weapon system (with its ammunition) and the added personnel of a firing crew.

- By ballistically matching the Scan Shell to the standard ammunition, there would be direct benefits to the gunnery procedure.

- Effective fire may be delivered without survey or transfer of target coordinates from a special target acquisition agency.

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

Group is Brigade

I'd like to point out an error in your September-October *Field Artillery Journal* on pages 20 and 32. Our new artillery brigade was referred to as the 17th Field Artillery Group. We are the 17th Field Artillery Brigade and our lineage goes back to the 17th Division (Thunderbolt).

Frederick S. Schenker
MAJ, FA
APO New York

Journal content

I would like to see the *Journal* have a continuing series on the history of various FA units. Maybe use the inside back cover to print a battalion's lineage and honors and the unit crest, the current commander, its mission and equipment, etc. I think it would increase unit esprit, and I would be willing to help with the research.

Stephen M. Lutz
CPT, FA
LaSalle College ROTC
Philadelphia, PA

Your suggestion is a good one that we have considered several times in the past and went so far as to collect a complete set of Active battalion lineages and color photos of each unit crest. To print just one battalion per issue would take 16 years just for the 100+ Active battalions, not to mention equal treatment for an additional 100+ Reserve FA battalions. Another reason for not starting such a series is, if only selected units were highlighted, what criteria would be used to select those to be published?

Thank you for your idea. We are always looking for reader suggestions on ways to make the content match readers' interests.—Ed.

Remote antennas and survive

During the Vietnam conflict, I was an aerial Morse intercept operator (05H2F). In addition to monitoring and copying enemy Morse communications, we had the mission of locating these enemy comms sites by means of triangulation. What this boiled down to, simply, was radio direction finding. We were more than successful, as our operations had caught the enemy flatfooted. However, our radio direction finding mission didn't locate too many radios: *antennas* were all we were finding. This was due to a concept which I term "remote employment of antennas."

This entails the erection of the antenna up to one-half kilometer from the actual transmitter/receiver site. Cable hookup (coupling) was accomplished to facilitate the elongated coaxial capability required. In some instances, numerous fixed antenna sites were established for a single enemy comms team. This allowed them to avoid our direction finding attempts as well as our ground-based recon missions by merely changing locations and tapping into the antenna closest to their new location. The results were confusing and frustrating for us. For them, operations were impeded for only the time required to tap into a new antenna site.

Due to the marginal electronic countermeasures available to us now — marginal in view of the Warsaw Pact EW capabilities — I propose that we adopt and refine this method of deception. Consider the following situation:

An M109 battery has just occupied their primary position. Various terrain masks dictate the erection of an RC-292 antenna to facilitate communications. Due to the Warsaw Pact counterfire threat, the fire direction officer decides to erect the antenna on the M577, using the on-carrier bracket provided. This, they believe, will give them a quicker displacement time than having the RC-292 ground-based. Soon, the FDC is humming with fire missions. The air is filled with radio waves which an enemy direction finding operator picks up immediately. Seven seconds pass and

Incoming

the transmitter/receiver location has been pinpointed; 32 seconds pass, and mixed caliber rounds are impacting in the battery area. The FDC sustained four direct hits.

Consider the effects that those counterbattery rounds would have had if the FDC had remoted their antennas two, three, or even four hundred meters. Consider the invaluable aid to deception possible by erecting the antenna at the offset position. In addition to the base piece firing its registration from the offset, enemy monitors would also be receiving transmissions from that position. Assuming this to be the actual battery position would not be that far-fetched. Indeed, it would be a very logical assumption.

Apply the same set of conditions to our fire support teams operating with the maneuver forces. By remoting their antennas, or establishing prepared antenna sites in a defensive situation, their flexibility as well as survivability will be greatly enhanced.

Mine is not the business of formulating tactics, but this lesson from an earlier conflict could come in handy in the future. I feel that linking coaxial cables and remoting antennas would be worth the time and trouble to achieve a higher level of survivability. This remoting of antennas would make threat radio-direction finding capabilities as ineffective as those Vietcong/NVA operators made ours.

Stephen P. Duvall
SSG
Fort Sill, OK

Reunion

The 4th Field Artillery Association (Mountain Pack) will meet 8 September 1979 at the Bordeaux Motor Inn/Convention Center, Fayetteville, NC. All former members of the 2d FA and 97th FA, both formerly 1st Battalion, 4th Field Artillery, and all former members of the 4th FA are invited to send complete name, address, and zip code number to W. L. Crawford, 416 Wayberry Drive, Fayetteville, NC 28303 immediately, in order to be included on a roster to be published and distributed early in 1979.

Accountability of SQT publications

With the Skill Qualification Test (SQT) becoming an increasingly important part of the Enlisted Personnel Management System, we should do everything possible to insure that our soldiers are prepared for testing. Although every unit should have an effective ongoing training program with records to corroborate completed training, there is still one area of SQT that we have overlooked. If a unit were visited and asked to display records showing that "SGT Jones" received his Soldier's Manuals, there probably would be no problem satisfying the request. A conscientious training officer/NCO would probably have devised some means of proving Jones had received his manuals.

If these training folks have good training records and Jones has his manuals, then what is the problem? The problem is, when Jones moves to another installation, how can the gaining unit determine whether SGT Jones has ever received Soldier's Manuals or any other SQT publications? Provisions have been made to charge soldiers for SQT

publications that are lost, misplaced, etc., after initial gratuitous issue. (Once again, the element of proving issuance.)

To prevent the training managers and commanders from having this infinitely recurring problem, a form should be produced to serve as a record of receipt of training publications. The form should be made a permanent part of the soldier's military personnel record jacket. When a soldier departs a unit, one of the documents to be checked by the commander as part of his clearing process would be the SQT publications form. On inprocessing at the gaining unit, the training section would check the form to insure that the soldier has the required materials. A system of this sort would insure that our soldiers are not at a disadvantage at test time due to nonissuance of required materials. With this method of inventory, commanders could in good conscience charge a man for lost manuals based on his signature on the form; in addition, the inventory would serve as a valuable training management tool.

Benjamin A. Campbell Jr.
ILT, FA
Fort Huachuca, AZ

Receipt of SQT publications

NAME: Jones, Joe A. **RANK:** E5 **MOS:** 13B20

DUTY STATION: Fort Sill, OK **UNIT:** A/2-2 FA
Fort Riley, KS B/1-5 FA

PUBLICATIONS RECEIVED	DATE RECEIVED	SIGNATURE
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FM 6-13B3	1 Dec 76	<i>Joe Jones</i>
FM 6-13B3/Ch 1	1 Jan 77	<i>Joe Jones</i>



Hopefully, this article will make supervisors of female soldiers aware of some of the problems arising from the increased number of women entering the Army. Supervisors must be familiar with the problems inherent in the differences and capabilities of the female soldier, as well as the various regulations and policies pertinent to the female soldier.

Background

Recent policy changes now allow women to command and to attend various academies and aviation training. Gone are the days of mandatory discharge due to pregnancy or marriage.

Early this year, the Department of the Army opened some of the Field Artillery specialties to women, raising questions about the traditional views of a "woman's place." It is no longer feasible to relegate one-half of the Army's potential manpower resources to "traditional" jobs when there is a possibility of using the available manpower more effectively.

Acceptance of more women into the service (table 1) and their employment in a wider role are the result of pressure from women's movements and the shortage of male volunteers. Female soldiers provide an excellent source of manpower *if* they are employed properly in skills for which they are trained and are given positive, professional leadership.

Table 1. Total female Army personnel, end of fiscal years 1971-1976 in thousands.						
	1971	1972	1973	1974	1975	1976
Officer	5.0	4.4	4.3	4.4	4.6	4.8
Enlisted	11.0	12.3	16.5	26.3	37.7	43.9

Enlistment requirements

Table 2 lists the female and male Army entry requirements. The disparity between the two is due to the needs of the Army — 60,000 enlisted women (EW), compared to 720,000 EM.

Table 2. Enlistment requirements.	
Male	Female
75 percent of monthly quotas must have a high school diploma. High school graduates must score at least 16 on the Mental Aptitude portion of the Armed Forces Qualification Test. A GED graduate or non-high school graduate (over 18) must score at least 31 on the test. If under 17 years of age, his score must be at least 50.	Only graduates with high school diplomas are accepted. Women must score at least 59 on the Mental Aptitude Test (the highest requirement of all the services).

The Army is placing great emphasis on the high school diploma because experience indicates that those who have completed this first major step in their life seem better able to adapt to the demanding requirements of military life. They also tend to be more emotionally and intellectually mature, thereby causing fewer discipline and morale problems.

Dependent limitations

If a husband and wife have three or more children (under age 18), only one parent may enter the Army. If an individual is unmarried and has any children, he or she may not enter the Army. There is currently no limitation on the number of children one may have after entrance into the service.

The number of dependents has an important impact on the usefulness of female soldiers. This applies to male soldiers also, but is more acute with the unmarried enlisted woman if she becomes pregnant and chooses to keep the baby while attempting to pursue an Army career.

Pregnancy and marriage

This area has caused the commander the greatest difficulties because no firm guidelines have been established to handle the myriad of problems, such as time off for monthly problems, exemption from duties, work details, and uniforms. The following is a guide for solutions to some of the common problems:

- If a woman enlisted, reenlisted, or extended before 1 August 1973, she may request discharge for reason of marriage.
- If a soldier is pregnant when she enters Active duty, she is discharged. If she become pregnant during basic training or advanced individual training, the doctor and training commander will determine the type of discharge to be given if the woman cannot *fully* participate in training.

Some women encounter problems which they are not prepared to handle when attempting to combine an Army career and a family. The Army has not routinely collected statistics, but some of the problems are as follows:

- Each full-term pregnancy in FY76 resulted in an average of 105 days of lost time.
- Approximately eight percent of Army women become pregnant each year. The lost productivity is difficult to measure, but must be put into perspective with other statistics. Table 3 illustrates the results of a 1977 survey of Navy personnel, indicating the actual lost time due to various problems. Statistics for the Army are probably similar.

The potential problems associated with pregnant soldiers can be grossly exaggerated or effectively controlled, depending on the supervisor's knowledge of regulations and his *willingness* to supervise.

Table 3. Lost time.

Reason for lost time	Days lost (percent of total available days)	
	Women	Men
Alcohol abuse	.09	.12
Drug use	.02	.12
Desertion	.07	.62
AWOL	.05	.24
Abortion	.03	
Pregnancy	.37	
TOTAL	.63	1.10

A pregnant soldier is expected to perform all her normal duties until she is granted a temporary physical profile. To offset the apparent eagerness of physicians to issue this profile, it is important for the commander and physician to communicate; each needs to understand the ramifications of decisions and procedures established for the female soldier and her duty performance. If a commander is faced with what he feels is an exceptionally limiting profile, he should not hesitate to consult the physician.

The soldier who becomes pregnant must be counseled and informed that, if she desires to stay in the Army, she is obligated to perform her duties fully and is eligible for worldwide assignment just like any other soldier.

A soldier must be sent to the doctor at the first indication of pregnancy. The physician will monitor the case and notify the commander when he determines that the soldier can no longer do her job and is to be placed on "sick in quarters," no earlier than four weeks before the expected delivery. If a soldier desires to take more time off, she must take ordinary leave. After delivery, she goes on convalescent leave, not to exceed six weeks. If she desires more time off, she must submit her request through channels to the Surgeon General, Department of the Army.

Commander's responsibility

It is the unit commander's responsibility to screen records and encourage discharge of those who appear to be potential problem soldiers. The Army has instituted a policy of extensive counseling by the unit commander as indicated by chapter 8, AR 635-200.

Some supervisors tend to grant special treatment to women who request time off or exemption from duty due to family responsibilities. The supervisor must enforce duty requirements and obligations of each soldier on an equal basis. If the soldier cannot fulfill the job requirements, the supervisor should initiate discharge procedures. Transferring or compensating for an individual who cannot pull all duties only places unnecessary burdens on other soldiers.

Sick call is viewed as one of the most serious drawbacks to having female soldiers in a unit. Their value to the unit is questioned when they appear to abuse sick call, especially in connection with the monthly menstruation cycle. For most women, menstruation is not a "sick call" excuse; with rare exceptions, women do not require time off or bedrest. In fact, it is medically advisable to maintain PT programs throughout this time as exercise tends to relax the muscles and minimize the discomfort of the menstrual cycle. Again, communication between the medical staff and the command section is important.



Uniform and appearance

Many supervisors appear hesitant to correct female uniform violations (AR 670-30), either due to uneasiness or ignorance.

The uniform should be properly tailored — neither too tight nor too loose. The skirt must be no shorter than two inches above the middle of the knee and no longer than one inch below the middle of the knee.

Proper undergarments must be worn. A few years ago it was the fad for many women to adopt the "braless" look. If a commander believes that his female troops are going braless in uniform, he is obligated by regulation

to inform her that she must wear the proper underclothes.

When pumps (high heels) are worn, they must be plain, unadorned, and solid black, with a closed heel and toe. Plain overboots may be worn with the Class A uniform (which includes the pantsuit). The overboots must be either black or clear plastic and must be replaced by normal footwear indoors. Women may wear either low-quarters or pumps with the Class A uniform. If the commander desires differently, he must inform his people which type of shoe to wear, bearing in mind that low-quarters are comfortable and designed for daily wear.

On fatigue duty or during PT, a woman may wear her T-shirt as an outer garment only if she *voluntarily* wishes to remove her fatigue shirt. Whether the woman is wearing male or female fatigues, the shirt is not to be tucked in the pants, but is to be worn outside.

When a woman is pregnant, she is to wear her duty uniform until it no longer fits comfortably and then she may go into civilian attire, at her own expense. She must continue to present a "military" image with respect to hair and jewelry.

Army regulations allow an unlimited variety of hair styles for the female soldier as long as the hat fits properly and the hair does not extend below the bottom edge of the collar. Hair may be of any length as long as it is worn up to meet these requirements. Some of the excluded hairstyles include the extremely bouffant (teased or back-combed), cornrows, and ponytail. Barrettes must be inconspicuous and match the hair color.

The only jewelry authorized with the uniform are watches, rings, or ID bracelets. Earrings are unauthorized, no matter how tiny or inconspicuous. There are no exceptions.

The supervisor must be aware of and enforce uniform regulations. The tendency to "look the other way," because an EW is especially attractive in her too-short skirt and pretty earrings, only leads to a lax appearance among all the troops.

Physical capabilities

Physical standards have not yet been clearly defined for each of the Army career fields; yet it is assumed that, after passing the entrance physical and completing the requisite physical training, the soldier can do almost any job. Before there were so many women in troop units the problem of physical inability was minor; the small or weak man was assisted by his buddies or moved to an easier job. Many female soldiers are being

Table 4. Characteristics of adult body composition in relation to physical performance.

Characteristic	Male	Advantage	Female	Advantage
Height	Taller	Greater lung volume, speed, and power	Shorter	Quick rotary
Weight	Heavier	Throwing power		
Muscle mass	Greater	Power, speed, and strength		
Body fat			Greater	Buoyancy
Center of gravity	Higher	Rotary movement	Lower	Balance
Pelvis	Shallower and narrower	Running speed		
Hips	Narrower	Power production	Wider	Stability
Shoulders	Wider	Weight support	Narrower	Flexibility
Chest girth	Greater	Ventilation capability		
Trunk length			Longer	Lower center of gravity
Leg length	Longer	Acceleration, speed, and power	Shorter	Agility
Elbow joint	Arms parallel from shoulders	Leverage in throwing; supporting weight		

assigned to formerly exclusively male positions, and they may be unable or unwilling to perform the assigned tasks.

Table 4 may assist the commander when physical strength is a question. It presents an indication of male and female body characteristics and physical capability.

Training

Basic training is now integrated at the former female basic training posts of Fort McClellan and Fort Jackson, but EM and EW are in separate platoons. The physical and weapons training for women have been upgraded through this integration. Field training is now more extensive, and women are learning how to handle themselves, their equipment, and living conditions in the field.

Even though training has been upgraded for the female soldiers, much remains to be done by the unit commanders. Women must go to the field with their units in order to provide an accurate picture of unit performance. If they are "left behind" at the office, then the unit is guilty of applying separate and artificial standards. Many women may not have received all the training needed to perform their duties in the new fields open to them. Unit commanders must provide additional individual training as required and insure women soldiers' full participation in unit training, field exercises, and unit duties.

Billets

Separate sleeping and latrine facilities are normal requirements. Latrine facilities can be "separated" in various fashions (i.e., building a wall down the middle of a double latrine, or merely a flip sign to indicate "in use" or "male" or "female." Sleeping facilities can be separate wings, on separate floors, etc.

The commander should establish clear and concise policies for billeting in the field. The senior NCOs should be placed in charge of the billeting, and the commander must back their decisions and mete out quick and equitable punishment to male and female offenders.

In general, female soldiers resent being separated from their unit and placed in artificial situations. They work and live with their male counterparts on a daily basis; they become a part of the unit. If they cannot rely on or trust their peers, they cannot be expected to function as part of the unit. Erecting a central tent for all of the women, placing guards on them, escorting them to the latrine, or even leaving them back in garrison does not solve the problem. Through these types of actions, soldiers begin to feel that the female soldier is just "part-time help" and will not participate in a real-war situation.

There will be some soldiers who will "test" the policies, but quick, decisive discipline will provide incentive for mature behavior.

ARs pertaining to female soldiers.

Administration and housing: 210-16.

Discipline and conduct: 27-10; 190-34; 190-38; 190-47.

General provisions: 600-3.

Medical fitness: 40-501; 140-120; 632-1.

Pregnancy, marriage, and parenthood: 40-3; 135-90; 135-178; 614-30; 635-120; 635-200.

PT: 35-20; 600-9.

Uniforms: 670-30; 700-84.

Utilization: 140-2; 140-10; 310-25; 310-49; 570-4; 600-200; 611-101; 611-112; 611-201.

Weapons training: 350-1; 350-4.

Attitudes

The female soldier, in general, is interested in pursuing a career or gaining an education, similar to those in the civilian work force. Most women just want to do a good job, be treated fairly and professionally, and avoid any hassles.

The supervisor sometimes applies his traditional attitude to job requirements and assigns the female soldier to jobs thought "proper" or "ladylike" — not taking into account the training or expertise the woman may have acquired. The commander must use his people

equitably, avoiding favoritism or a protective attitude which will cause morale problems among the troops and first line supervisors. Some NCOs experience problems at home when their wives learn that they have young female soldiers to supervise. This situation can be remedied by educational briefings.

The junior enlisted male soldier seems to hold a more liberal view of the female soldier, probably due to different social mores prevailing during his formative years. They expect her to carry her load, and that includes equal duty rosters. They quickly notice any favoritism shown the female soldier — this can lead to disaster for the unit.

Fraternization

Discipline can only go downhill in the unit where fraternization takes place, especially between junior female soldiers and senior male NCOs or officers. The most frequent first step toward familiarization is male supervisors calling only female soldiers by their first names.

As a direct result of fraternization, favoritism may be demonstrated in the assignment of extra duties and work details. By showing partiality and clinging to outmoded beliefs, the supervisor loses control of his section and effectively alienates the majority. The supervisor will find that his unit functions on a



Female battery commanders are in the near future as the Field Artillery adapts to changing roles for women soldiers.

smoother and more professional basis if he assigns duties on the basis of individual ability rather than sex.

Discipline

The supervisor must attempt to deal fairly with everyone, avoiding the temptation to "come down too hard" to make up for past leniencies — or the reverse, dealing too lightly with transgressions so as not to upset the female soldier.


Some women react to criticism or punishment with tears. Supervisors are sometimes completely destroyed by this display and tend to react erratically, meting out discipline based on the soldier's emotional display rather than on the offense. The offender's sex should not determine the outcome.

Female officers and NCOs

Many women have demonstrated that they possess the aggressiveness, knowledge, and leadership necessary to command troops, as well as to serve in staff positions. Old barriers and myths begin to fall as these

women demonstrate their concern with duty performance, job satisfaction, and career progression. This does not mean that we are becoming a nation of "Amazonian women," but simply that individuals are stepping out of preconceived roles and filling slots where they are badly needed.

The best way to insure that officers and NCOs become good leaders is to insure that they receive good training and proper employment. If your unit receives a new female second lieutenant, do not automatically assume that her driving passion is administration — she might be terrific in supply, signal, etc. Look at her MOS and training, and then place her in the best position for the unit, the Army, and her career.

Many women have a high degree of skill and education and, with positive leadership, they can develop into good soldiers. They represent a valuable resource if given the opportunity. 

CPT Rosanne M. Robison (MI) was assigned to USAFAS when this article was written. She is now attending the Military Intelligence Officer Advance Course.

Commanders Update

COL Gerald P. Stadler
1st Cavalry Division Artillery

COL William Howerton
2d Armored Division Artillery

COL Curtis F. Hoglan
72d Field Artillery Group

COL Douglas W. McCarty
212th Field Artillery Group

COL Stephen A. Glick
US Army Field Artillery Training Center
Fort Sill

COL Donald W. Jones
528th Artillery Support Group

LTC Rollie D. Cook
4th Battalion, 4th Field Artillery

LTC John B. Seely
2d Battalion, 11th Field Artillery

LTC Joseph V. Lagas
1st Battalion, 13th Field Artillery

LTC Manuel Lopez
1st Battalion, 14th Field Artillery

LTC Roger L. Bernardi
6th Battalion, 14th Field Artillery

LTC Stacy E. Reeves
1st Battalion, 15th Field Artillery

LTC David W. Hazen
2d Battalion, 17th Field Artillery

LTC Arnold T. Rossi
3d Battalion, 19th Field Artillery

LTC Richard Erickson
2d Battalion, 27th Field Artillery

LTC Thomas K. O'Malley
1st Battalion, 32d Field Artillery

LTC John E. Myatt
3d Battalion, 34th Field Artillery

LTC Joseph D. Britton
3d Battalion, 35th Field Artillery

LTC Lawrence D. Brooks
6th Battalion, 37th Field Artillery

LTC Leonard D. Hardy
2d Battalion, 41st Field Artillery

LTC Craig H. Leyda
1st Battalion, 77th Field Artillery

LTC David C. Meade
1st Battalion, 79th Field Artillery

LTC Jennings H. Mease
1st Battalion, 83d Field Artillery

LTC Charles S. Palmer
2d Battalion, 83d Field Artillery

LTC Albert C. Waldack
1st Battalion, 84th Field Artillery

LTC Martell D. Fritz
2d Training Battalion
Fort Sill

LTC Robert A. Watters
3d Training Battalion
Fort Sill

LTC Arthur F. Bondshu
Support Battalion, 193d Brigade
Fort Amador, CZ

The Artillerist

by MAJ Winn B. McDougal



(Photo by Gene Bonhage)

They were outnumbered 3 to 1 and surrounded. The enemy launched an artillery bombardment of their position. One soldier, seeing a comrade die, took his place and serviced a howitzer to return fire on the massed enemy. Wounded in the arm and chest, the soldier continued to load and fire the howitzer until the position was overrun.

A support soldier was in the midst of an artillery unit when a howitzer crew was routed by incoming fire. The soldier took charge of the unmanned gun, rallied another crew, and fired effectively into the enemy until the enemy attack broke off.

There is nothing unique about these two acts. They have been repeated throughout our history in the great battles in which our field artillerymen have fought. But one thing does stand out about these two soldiers . . . *they were both women!*

The first, Margaret Corbin, was captured by the British after the First Company of the Pennsylvania Artillery was overrun at Fort Mifflin, NY, on 26 September 1776. The second was Mary (Molly Pitcher) Ludwig Hays who fought with another Pennsylvania unit on the Monmouth Plain. She was issued a warrant as a noncommissioned officer on the spot by GEN George Washington. She was pregnant at the time.

For the first time since the Revolutionary War, when women took up the arms of their fallen husbands in battle, women are now in the Field Artillery. They are joining missile crews, target acquisition batteries, and artillery staffs above battalion level in increasing numbers. Some day a Jane Jones may be the gunner on your M109. The way they are trained and treated will have a great effect on the mission accomplishment of our Field Artillery units.

Commanders of women soldiers must learn how to use these soldiers effectively. With this in mind, the commander (usually male) will probably try to cope with what is perceived as a new and possibly negative situation for which he has little or no training. This article is intended to make the "coping" a little easier and the situation less difficult and more positive.

There are a number of issues which confront soldiers daily regarding women in the Army, particularly in the Field Artillery. Women's minority status [in the Army] is complicated by such factors as restrictions on their assignment to close combat units and their relative newness in the formerly man's world of the military. Besides their difference in strength and endurance capacity, their physical differences impose needs for certain differences in uniforms and medical service. Social distinctions result in differences in department

between male and female soldiers. Perhaps the most important difference is the male perception of females — what women can and cannot do, why they are in the Army, and how to work with them while retaining their own soldier self-image. The ramifications of pregnancy, field hygiene, upper body strength, and fraternization have all received public attention in recent years. Changes in DA policy and potential changes in restrictions on the assignment of women have created an attitude problem for many commanders.

As with any dynamic situation, the changes are confusing to some and breed reaction in others — either the "women can't do anything" or the "women can do everything" response will make a problem out of a situation.

Results from Maximum Wac (MAXWAC), WACs on Reforger (REFWAC), and other tests have provided some interesting insights. Probably the most significant is the fact that women soldiers can perform most tasks as well as their male counterparts. When women cannot properly perform, there are usually remedies available. Inadequate female performance may be partly caused by:

- Nonacceptance by the unit chain of command. Paternalism coupled with male chauvinism among senior supervisors. During REFWAC, NCOs often left their women soldiers without meaningful jobs to perform. Some NCOs then excused women from duty to get them out of the way.

- Improper utilization. Separate and different BCT prior to 1977 inadequately prepared women for field duty. Once in the field, surveys showed that women were often not performing the MOS for which they were trained and not assigned specific tasks which contributed to unit combat effectiveness. MAXWAC and REFWAC tests results, for example, indicate that many women holding "nontraditional" MOSs worked as clerks.

- Inadequate social and medical services. Statistics on "lost time" for Army women fail to reflect, for example, that gynecological services are not available to female soldiers in the unit and even at many installations. Lost time included travel to and waiting for inadequately staffed GYN facilities. One REFWAC participant had to spend three days in waiting and travel time for a 30-minute medical consultation.

- Lack of a "female chain of command." Often during the late 1960s or early 1970s, commanders looked for high visibility black officers and NCOs to "cool out" racially discontented black soldiers. It was even institutionalized in our RREO program. No such attention has been given to women. We don't need to go through this again. The chain of command must recognize that the female soldier's need for empathetic

communication, understanding, and role models is as great as any other minority group.

- Lack of adequate human engineering for females in design of military facilities, supplies, and equipment. From field jackets to barracks, the female soldier must tolerate "quick fixes" or inadequately designed equipment, clothing, and quarters, while being judged by male-oriented standards.

- Lack of established prerequisite standards, particularly physical, for MOS suitability. Often we hear that "women do not have as much upper body strength as men." That does not mean that some women cannot perform as well as most men. Yet our policies discriminate on the basis of yet-to-be established standards. Preliminary physical standards for male and female performance of critical MOS tasks contained in the "Women in the Army Study" indicated that duties in some restricted MOSs (13F) can be performed by



Women who have not had athletic training may have upper body strength problems. With physical training, women can be conditioned to double their weight lifting capacity in a few weeks. (Photo by Gene Bonhage)



Tests have indicated that women can handle most tasks as well as their male counterparts.

women, while duties of some MOSs open to women (17C) cannot. All of these factors paint a picture of potential frustration.

The personnel available to make a unit function can change drastically if workloads are not properly distributed, morale is low, sick call is high, and self-discipline is lacking. Where commanders have become part of the solution instead of the problem, female soldiers have done as well as their male counterparts in spite of institutional failure to meet their needs. We do not have much experience in the Field Artillery to get us going in the right direction, but there are some emerging guidelines that have enabled units with women soldiers to perform effectively. Basically these guidelines involve five areas:

- Work standards.
- Social and counseling services.
- Sex discrimination.
- Living standards.
- Equal opportunity.

Work standards must be set by the commander for all soldiers. These standards must assure recognition of the differences previously discussed; otherwise, no difference for females must be allowed to creep in. This applies to field duty as well as garrison. When a female soldier feels like a productive member of a team, she will contribute to the success of the team effort.

Social and counseling services must be provided to meet the needs of female soldiers. They are different in

this respect. Some successful methods include GYN and feminine hygiene training for the chain of command and all women; rape prevention seminars for all soldiers (it is the men who commit rape, and *they* must be aware of the physical and psychological damage it does to their "sisters"); access to female NCOs and officers (if none are in the unit) for women soldiers and for the chain of command; and a command emphasis on locally available medical facilities for women.

Sexism is psychological warfare against women (or by women against men in some cases). Allowing sexist attitudes or behavior is counterproductive and must be firmly controlled. We have all seen examples, from snide remarks and put-downs to giving slack where none is warranted or demanding more work where it is felt a woman must constantly prove she is a soldier. Test results from MAXWAC and REFWAC highlight sexist behavior as a significant negative factor in unit integrity and point to the first line supervisors as most often being the perpetrators. As difficult as it was to get many of our NCOs to stop saying "boy" to male black soldiers, the behavior changed for the better when mutual respect became standard. The challenge before us is to strike the word "honey" from our vocabulary when addressing female soldiers. While we often cannot change attitudes, we can enforce standards of behavior that allow women to do their job without having to be defensive.

How we live in garrison and in the field tells a lot about a unit. Many units separate female soldiers into a consolidated area to "protect" them or provide "adequate" facilities. This policy is almost sure to cause more problems than it solves. Equal treatment does not mean "separate but equal" except for reasonable privacy. A unit with women fully integrated in living accommodations is likely to minimize the problem of "sexual targeting" of the "WAC barracks" or "WAC tent," so often encountered. Soldiers who live with their section will take care of one another. This is not to say that male and female soldiers should cohabit or take communal showers. They should have access to latrine, shower, and sleeping facilities without being forced to expose themselves to the opposite sex. Men and women should get the same quality of living facilities and be able to maintain small unit integrity.

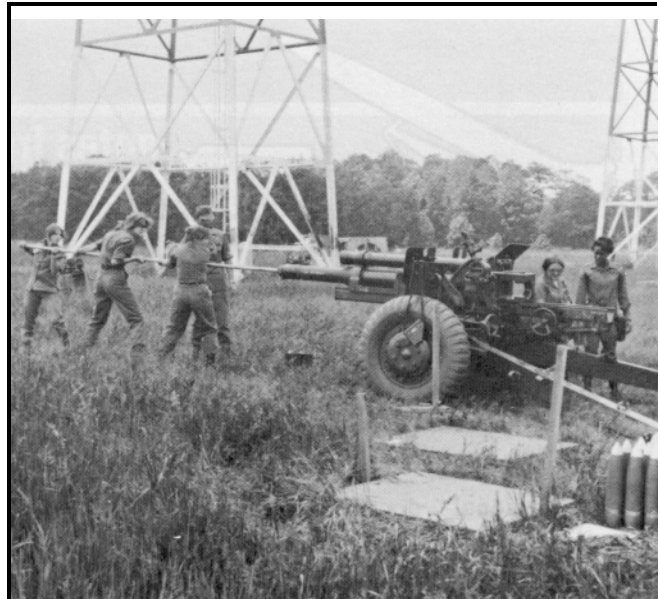
Unit operations can really break down when it comes to pulling details and guard duty. Comments like "we can't send her out there alone" or "she's pregnant and off the duty roster" are sure-fire indicators that another soldier is going to pull double duty. She *can* go out there alone, *if* we insure she has adequate self-defense training and has a responsive commander of the relief. She *can* pull duties when pregnant, *unless* her doctor indicates otherwise. Until then, she can do anything she

was previously able to do. Again, equal opportunity should mean equal standard and equal responsibility.

"But women can't lift things" or "they're out of commission at least three days a month." Women *can* lift things. How many men have carried a 60-pound child on their hip for hours? Most women can cope with menstruation without resort to a sick slip.

There are upper body strength problems for female soldiers who may never have had athletic training. Most schools are now correcting that with mandatory physical education. Even without that background, women can be conditioned to double their weight-lifting capacity in a few weeks. Handling litters with 200-pound patients or 8-inch rounds on a loading tray may stress most women more than most men; however, most women can be conditioned to do sustained lifting of one-half of their body weight. For a 110-pound soldier, that means that a 155-mm projectile with the loading tray is within her lift range for a two-soldier operation. Based on preliminary findings, the MAXWAC study indicates that lift requirements of some closed Field Artillery MOSs, i.e., 13E, can be met by some women. Testing at the Human Engineering Laboratory at Aberdeen Proving Ground, MD, indicates that female soldiers, when properly conditioned, can perform loading and some other crew duties on the M102 and M114 howitzers as well as men. If combat unit assignment restrictions are lifted, we may see Field Artillery cannon MOSs opened to women in the future. Much more testing and experience is needed, however, before conclusions are drawn. We are breaking new ground; intemperate decisions may cause serious problems. For example, if men cannot cope with women in a sustained field training or combat environment, all the "well wishing" in the world will not help unit combat effectiveness.

The female soldier must play her part too. "Call me soldier" is a familiar cry. But women in the Army are restricted to roles which limit their exposure to close combat. Whether or not this policy changes depends ultimately on whether or not our society will accept female combat casualties and also, in part, on how



The women soldiers who participated in the Aberdeen artillery study found that preventive maintenance paid off. Here, the women clean the tube of a 105-mm howitzer to avoid complications in loading and firing. (Photo by Gene Bonhage)

today's women soldiers perform in the jobs they currently fill. In the Field Artillery, all but three of our 17 MOSs for enlisted women and all but one of our four FA specialities for officers are open to women. While extensive testing is needed to determine the advisability of changing current policy restricting women from close combat, their day-to-day performance is going to provide significant indicators of their effectiveness as soldiers. With this in mind, our Field Artillery commanders must help our female soldiers strive for competence and confidence in the art and science of the military profession, just as they do for our fighting men.



MAJ Winn B. McDougal is assigned to Fifth US Army Headquarters as an operations and staff officer. He has extensive experience in Field Artillery command and staff positions.

Deadlines for publication

Approximate deadlines for submitting items to be published in the *FA Journal* are listed by issue below:

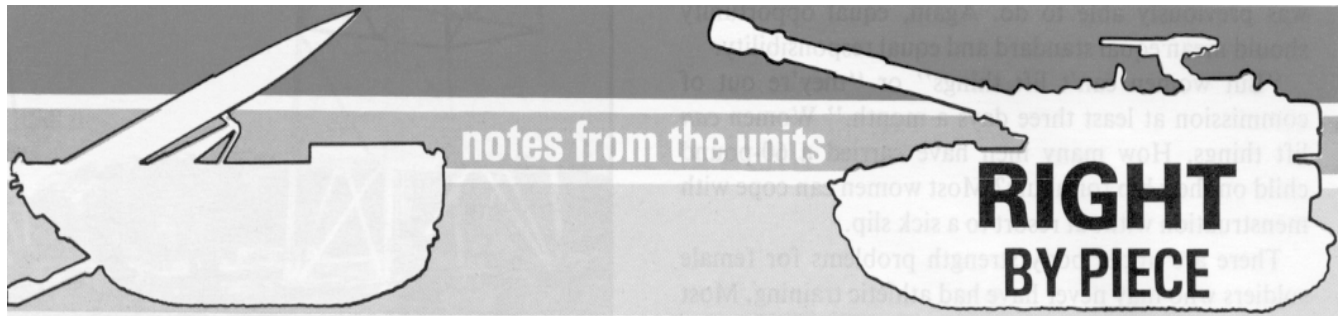
Issue	Deadline	Issue	Deadline
Jan-Feb	20 Nov, preceding year	Jul-Aug	20 May
Mar-Apr	20 Jan	Sep-Oct	20 Jul
May-Jun	20 Mar	Nov-Dec	20 Sep

Feature material (Incoming, Right By Piece, etc.) must arrive at the *Journal* by these deadlines.

Full-length articles should arrive at the *Journal* at least one week earlier than the above deadlines as they require staffing, preparation of art, etc. More time might be needed, depending on the amount of work required by the *Journal* staff.

Writer's Guides are available upon request. Write or call us if you are interested in writing for the *FA Journal* (address and phone numbers are listed on the inside of the front cover).

Sit down and write that article NOW!



Corps Arty reorganized

FORT BRAGG, NC — Revisions of Field Artillery organizational doctrine have resulted in the redesignation and reorganization of the XVIII Airborne Corps Artillery as the 18th Field Artillery Brigade (Airborne). Under the new concept, the brigade will "concentrate on providing artillery support for units within the XVIII Airborne Corps, such as the 82d Airborne Division," according to COL Jere Hickman, Commander of the 18th FA Brigade.

The brigade now becomes the first and only airborne artillery brigade as well as the first cannon artillery brigade to be organized in the modern Army.

Daily routine of the soldiers and units within the brigade will remain the same. However, the former Headquarters and Headquarters Battery (HHB), of the XVIII Airborne Corps Artillery will split into two groups, one becoming HHB, 18th FA Brigade, and the other becoming a special Field Artillery Section (FAS), assigned to XVIII Airborne Corps Headquarters.

A determination has not been made as to whether the brigade will be assigned a new crest and colors.

Div arty unit gets sea-time

SCHOFIELD BARRACKS, HI — Seaborne training led the schedule recently for more than 900 soldiers of the 25th Infantry Division Artillery taking part in a seven-day inter-island exercise.

Three 25th Div Arty battalions boarded the Navy Reserve ship *Paul Revere* for a 13-hour trip from Pearl Harbor to the big island of Hawaii where the division's newest unit, D Battery (Target Acquisition), played a leading role in the counterfire exercise. The TA battery located a number of firing batteries only

minutes after they had been set up, forcing them to relocate.

Sailing was smooth on the inter-island trip, but a number of Redlegs felt their stomachs roll occasionally. Loading and unloading were accomplished swiftly, and the unit was rolling within four hours after its arrival at Hilo Harbor.

Returning home the men were tired and the equipment in need of cleaning, but satisfaction in the accomplishment of their mission was apparent in the faces of the men.

First Cav Div Arty displays TACFIRE for Guard

FORT HOOD, TX — The 1st Cavalry Division Artillery recently played host to a group from the Mississippi National Guard in a five-day introduction to the TACFIRE system. The National Guardsmen were the 631st Field Artillery Group, the controlling unit for all Field Artillery battalions in the Mississippi National Guard.

Even though the 631st FA is not formally affiliated with the 1st Cav Div Arty, COL Robert Leard, Div Arty commander, felt the total Army concept would be best served by exposing the control group to TACFIRE.

Five Guard officers and one NCO participated in the "First Battle" simulation game to aid the 631st in developing scenarios for their own FTX/CPX problems. COL Sid Brook, commander of the 631st, was impressed with both TACFIRE and "the dedicated soldiers of the Division."

Joining the 631st were four officers of the 4th Battalion, 114th Field Artillery, Mississippi National Guard, who worked with the 2-19th FA, their affiliated battalion at Fort Hood.

Trading chiggers!

FORT STEWART, GA — "They say they know all the chiggers by name." It's an old joke that comes from more than 20 years of training in the same location. This year, Georgia and Mississippi artillery units are trading chiggers.

As part of a two-state exchange program, the 1st Battalion, 114th Field Artillery (MS Army National Guard), headquartered in Greenwood, MS, is training under the command and control of the 188th Field Artillery Group, a National Guard unit from Savannah, GA. Georgia's 1st Battalion, 214th Field Artillery of Statesboro, received its annual training at Camp Shelby, MS.

The new concept offers benefits for both the host and visitor. A unit that must go out of state for its training gains valuable experience in troop movement and supply as well as operating under a different command in new terrain.

The units are also being evaluated on their combat readiness during exercises at Fort Stewart. Staff officers of the 24th Division Artillery are serving as individual unit evaluators.

Training exercise an "all-hands" affair

BAUMHOLDER, GERMANY — No one considered it unusual when Battery A, 1st Battalion, 83d Field Artillery, spent a week at the training area here. What made this exercise extraordinary was that everyone who could possibly be in the field was there.

"We treated this exercise the same way as a trip to Grafenwoehr," said battery commander CPT James Hardin. "We locked the barracks so we wouldn't need a CQ. We didn't have to worry about guard duty, and we didn't have to supply personnel for such things as head count NCO. . . . Battalion gave us training priority for this week and let us do whatever we thought necessary. We've been able to get maximum training with minimum drain on personnel."

"The best thing about this is everyone is getting the training," said SSG Efrain Aponte, a section chief. "We've concentrated on the individual skills a cannoneer or fire-direction man needs to know. The men are getting a lot out of this."

Classes covered such areas as how to set up an

aiming circle, defense of the battery position, communications, CBR, how to lay a battery, and first aid among other SQT-related tasks. Each man had his own training schedule, based on his MOS, that detailed exactly what he was supposed to be doing.

"This is the most concentrated personal training I've had since AIT," said PFC Curt Close, a cannon crewman specialist. "There have been no distractions and if you don't understand something you can corner someone later and ask. It's an opportunity we don't get as easily in garrison."

It was not all work and no play for A Battery. After-training hours were occupied with volleyball, softball, and barbecues. (James Garamone, *Credentials*)

Long march revival in Europe

WERTHEIM, GERMANY — Revival of the once-interminable pursuit of the foot soldier, the long march, is taking place in the Dutch countryside where members of B Battery (TA), 29th Field Artillery, capped a three-month, 800-mile training program by completing a four-day, 105-mile march.

Units participating in the Nijmegen march must walk approximately 26 miles per day for four consecutive days, carrying a 22-pound pack. The 17-man team from B Battery earned the distinction of being the only battery-sized element to complete the distance.

In the age of the mechanized Army, the members of B Battery have shown that the spirit of the foot soldier remains.

No one dropped out of the B-29th 17-man entry in the Nijmegen march.



Right By Piece

Missile meeting

FORT SILL, OK — The "Pershing Community" held a Pershing Missile Conference here in August. The conference was called by Field Artillery Missile Group Nine and the Field Artillery Missile Systems Evaluation Group. BG Dwight L. Wilson, III Corps Artillery commander, hosted the conference and gave the opening remarks. Those attending included representatives from SHAPE, USAREUR, the 56th Field Artillery Brigade, and interested military and civilian activities.

The purpose of the conference was to review the current status of the Pershing Ia system and its follow-on, Pershing II. The NATO tactical evaluation program, Pershing in Europe today, and Pershing training programs were also discussed.

During the period October 1977 to May 1978, five Pershing II advanced development missiles were successfully fired from McGregor Range, NM. All test objectives were met and the firings were considered very successful.

The current assessment of the Pershing Ia system finds that all is well, and that Pershing units are meeting their NATO mission. The future of Pershing II is bright and it should be entering engineering development in the very near future. This fall, eight Pershing Ia missiles with the latest modifications will be fired from McGregor Range by units assigned to the 56th Field Artillery Brigade and Pershing squadrons of the German Air Force. The firings will be supported by members of Battery B, 3d Battalion, 9th Field Artillery.

Meet and records fall to 25th Div Arty

SCHOFIELD BARRACKS, HI — Five new meet records fell to 25th Infantry Division Artillery athletes who recently unseated the defending champion 1st Brigade in the 1978 Division Track and Field Championship.

Div Arty's Ricky Cline bested the old meet mark in the 120-yard high hurdles by nearly a second with a 15.08 clocking. The 440-yard relay team of Lester Kelley, Kevin Brooks, Greg Walters, and Mark Ardrey shattered the old meet mark of 44.80 with a 43.50 time. In the mile relay, Ardrey, Cline, Brooks, and Anthony Yates came in with a 3:28.2.

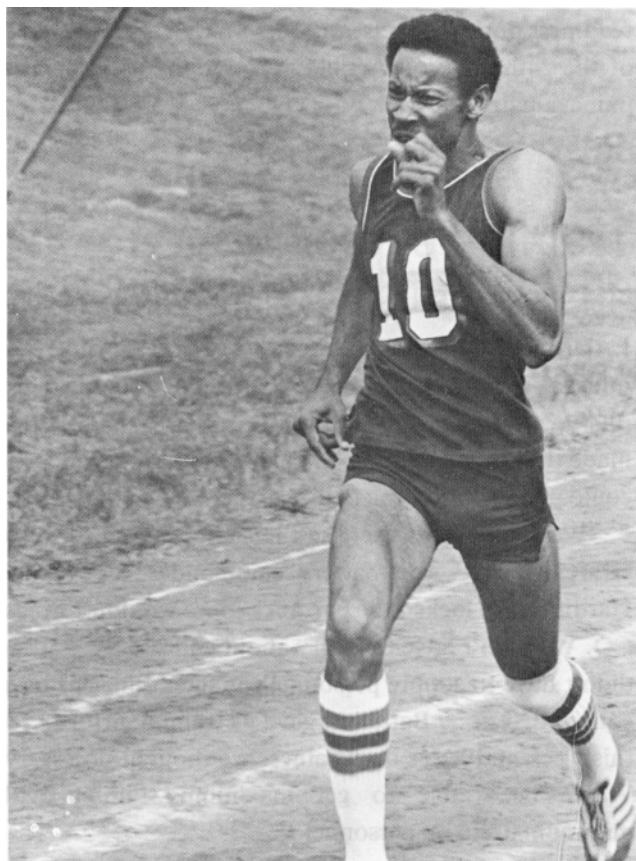
A new mark in the senior mile was set by Robert Sausser with a 5:02. Karen Mortier won the women's mile for Div Arty and set a new meet record with a time of 6:37.

In the field events, Harold Malone took the discus title with a throw of 116.9 feet, and Apela Afoa won the shot put with a distance of 42 feet, 3 inches.

319th FA edges Infantry in track meet

FORT BRAGG, NC — The three-year reign of the Infantry in the annual 82d Airborne Division "All American" track and field meet was ended recently by the 1st Battalion, 319th Field Artillery. The Redlegs placed in top positions in 12 of 19 events, taking overall first place from the 2d Battalion, 508th Infantry of the 1st Brigade, which has dominated the meet since 1975. First place honors were won by artillerymen in these events.

Event	Winner	Time
880-yard run	Alfred Clark (1-319th FA)	2:02.51
440-yard run	Alfred Clark	54.6
120-yard high hurdles	Richard A. Brown (1-320th FA)	16.6
1-mile relay	1-319th FA	3:44.1



Alfred Clark of the 1st Battalion, 319th Field Artillery, pours it on in the final stretch of the 440-yard dash. (Photo by SP4 Scot M. Heino)

Top ROTC grad selects Field Artillery

WASHINGTON, DC — 2LT William H. Ibbotson, assigned to the 6th Battalion, 14th Field Artillery, has been named the outstanding ROTC graduate of 1977. Ibbotson graduated *magna cum laude* from Texas A&M University.

The Hughes Trophy was presented to the artilleryman by Undersecretary of the Army Walter B. LaBerge in ceremonies at the Pentagon. The award for 1976 was also won by an artilleryman.

Div Arty leads 3d ID

KITZINGEN, GERMANY — The 3d Infantry Division Artillery has won the Division's major subordinate command reenlistment award for eight consecutive months. The award was based on a year-to-date reenlistment of 249 soldiers — 267 percent of a 93-soldier objective. Of the 249 reenlistments, 167 were for their present duty assignments.

SFC Matthew J. Watts, Div Arty career counselor, attributes Div Arty's success to "super commanders." Watts added that "We, as career counsloss, provide technical assistance. But situations, circumstances, and even locations sometimes present obstacles. When a strong commander supports the progra and has an open ear, then the mission of the career counselor can be much more effectively accomplished."

New battery for 5th Inf Div Arty

FORT POLK, LA — Battery K (Target Acquisition), 29th Field Artillery, was activated last August into the 5th Infantry Division (Mech) Artillery.

The Div Arty Commander, COL Orren R. Whiddon, said "The activation of K Battery provides new dimensions in the division's ability to promptly and effectively acquire enemy targets through radar, flash bases, and sound ranging devices."

The incorporation of the unique equipment used by K Battery will further enhance Div Arty's support capabilities and tactical value.

US-German combined training on target

BAMBERG, GERMANY — The big guns of the 2d Battalion, 78th Field Artillery, raced around the Poedeldorf training area, each crew intent on a series of tasks that would take it through most of the Skill Qualification Test. Boresighting, crew drill, and laying for direction, the crews performed well even though half the soldiers were from the 125 Panzerartillerie Battalion of Bayreuth.

Eighteen Germans were guests of the 2-78th FA for a week to determine how the troops work together and perform the tasks they would need to know in combat. Six of the German soldiers went to each battery, three on each of two gun sections. Since the Germans use the same howitzer (in the short tube M109 configuration) they had little difficulty adjusting to the newer version.

The battalions enjoy particularly good relations and average 15 to 20 major events of this kind every year.

Regiment reunited in Europe

GRAFENWOEHR, GERMANY — A unique event took place recently at the Grafenwoehr training area when the 1st and 3d Battalions, 16th Field Artillery, both arrived for training at the same time. The event was rare because these units usually operate far apart, even though they are both part of the same regiment.

The 1-16th FA had only recently arrived from Fort Hood, TX, as the last artillery unit to participate in the Brigade '75 program. It will move its equipment to Garlstedt, Germany, in January 1979 for use by the 1st Battalion, 14th Field Artillery, which moves to Garlstedt from Fort Hood to become part of the 2d Armored Division (Fwd). The 1-16th will then return to Fort Hood.

The 3-16th FA is a part of the 8th Infantry Division at Baumholder, Germany.

About 50 officers celebrated the rare reunion with a regimental party at the Grafenwoehr officer's club.

Right By Piece

TI59 field evaluated

FORT RILEY, KS — "Hands on" testing of the TI59 programmable calculator is being conducted by the 1st Battalion, 5th Field Artillery, with the assistance of the Field Artillery School.

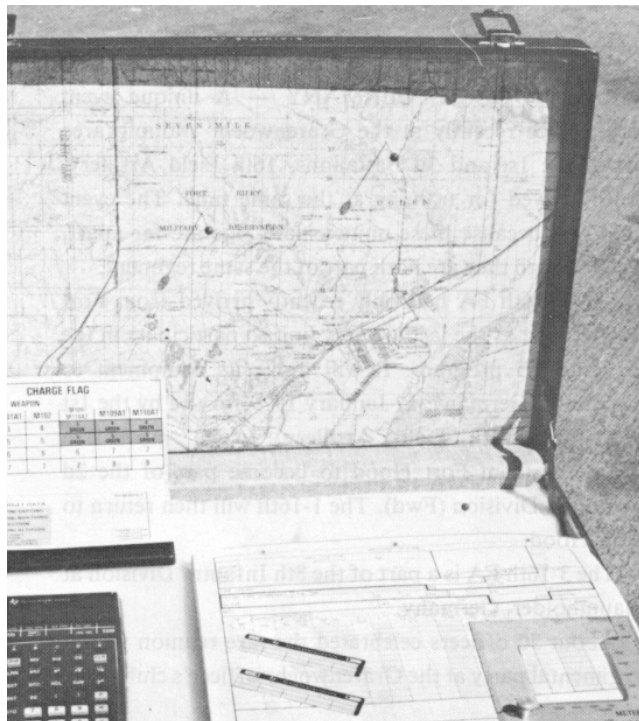
Similar in appearance to the hand-held calculators that perform basic math functions, the TI59 can be programmed for special functions by the use of a miniature computer card. It is easily transported, quick, accurate, and easy to use according to LT Thomas Stavridis who initiated the setup and operation of the calculator for the Battalion.

Personnel from the Gunnery Department at the Field Artillery School helped design the basic program for the calculator. "We've fired more than 1,000 rounds using the TI59 without any major mishaps or misdirections," said SGT David Alexander. "We used it during an ARTEP and for our ROTC support without any problems. I'd prefer using it anytime."

Learning to operate the TI59 presented no problem for seasoned FDC personnel. Familiarization with the calculator averaged no more than two hours.

The traditional method of computing firing data has been with FADAC or by a manual system. FADAC is powered by a generator that must be located outside the armored personnel carrier that houses the FDC, is

The TI59 programmable calculator in a briefcase with maps and charts needed to record data.



noisy, and requires a lot of maintenance. The present system includes equipment that weighs almost 600 pounds and has to be quickly transported to different sites during operations.

The TI59 is easily transported in a briefcase. Internal batteries provide the power for the system. Maintenance is limited to using a head cleaner on the unit.

"While the FADAC is a good piece of equipment that can perform functions the TI59 can't, I see this as the coming thing for artillery," Stavridis said. (SP4 Lewis Parson)

Female cadets observe real Army

GIESSEN, GERMANY — After two years at the Military Academy, West Point cadets Sylvia T. Moran and Tamara C. Kaseman got their first look at regular Army units.

The two cadets spent four weeks temporarily assigned to the 3d Battalion, 79th Field Artillery, where they practiced the leadership techniques for which they had been trained at the Academy.

Moran served as motor officer in A Battery while Kaseman performed the duties of platoon leader in C Battery. Both enjoyed the cannon firing battery duty — a field closed to female officers and enlisted women.

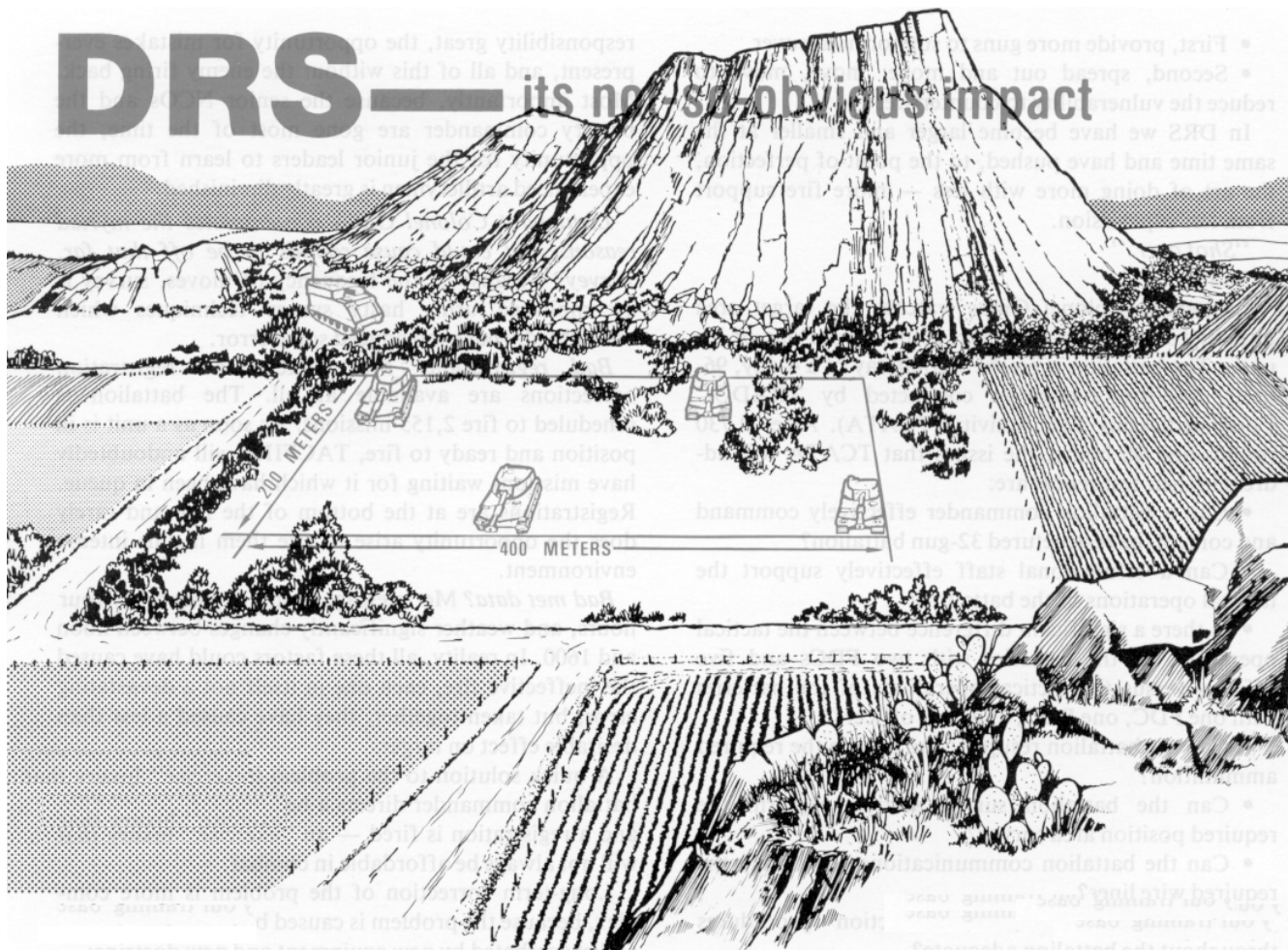
Cash award for Army scientists

WATERVLIET ARSENAL, NY — A team of 12 Army civilian scientists recently won the largest monetary award possible under the civil service incentive awards program for development of a simulated test firing method to determine the safe firing life of cannon barrels.

The simulated method replaces a major portion of costly test firing used to determine how long cannon barrels can be used before metal fatigue makes them unsafe. Use of the new technique has saved more than \$30 million.

A total award of \$25,000 was presented to the team. Scientists receiving the award were Dr. Thomas Davidson, laboratory director; Bruce Brown and Albert Reiner, research mechanical engineers; Donald Winters, research electrical engineer; George Sogoian and Joseph Wide, mechanical engineering technicians; Abraham Rubin, Stephen Ball, John Williams, Bruno Grestini, and James Kelly, physical science technicians; and John Zalinka, electronics technician.

DRS — its not so obvious impact



Art by Lee Gibson

by CPT Darrell Morgeson

The evaluator from the Army Research Institute carefully placed his thermometer on top of the camouflage net covering the controller's 1/4-ton truck — 139° on the surface of the special blackened sensor, with a 92° wet bulb! "But," he was quick to point out, "it's 20° cooler in the shade."

LTC Homer J. Gibbs, commander of the 1st Battalion, 77th Field Artillery, wasn't in the shade. He stood on OP "Armstrong," observing the fires from each of his eight 4-gun elements. He and his battalion had spent the summer, a hot one even for Texas, conditioning themselves to cope not only with the heat, but also with the fatigue caused by the DRS (Division Restructure Study) concept of employment.

DRS concepts

For the artillery, the salient concepts of the restructured direct support battalion are:

- Four 8-gun batteries each consisting of two 4-gun elements separated by a distance of 400 to 1,600 meters.

- The weapons of each element spread in an imaginary 200- by 400-meter box.
- Frequent movement of elements to reduce the vulnerability to counterfire.
- Tactical and technical fire direction processed by a TACFIRE computer.

Austere to the point of being downright lean, there are only the guns, M548s, and an FDC (fire direction center) or BOC (battery operations center). For test purposes, two of the batteries in the 1-77th FA are configured with two FDCs, one in each element, and two of the batteries are configured with an FDC in one element and BOC (really just a glorified "XO's post") in the other element. The battalion tactical operations center (TOC) consists of the TACFIRE computer and a small operations/intelligence section. The administrative and logistical tail of the battalion, which includes service and maintenance batteries, is located in the brigade trains area. (See *FA Journal*, May-June 1978.)

Two central concepts drive the organization:

- First, provide more guns to support maneuver.
- Second, spread out and move, move, move to reduce the vulnerability to counterfire.

In DRS we have become larger and smaller at the same time and have pushed, to the point of perfection, the art of doing more with less — more fire support from less supervision.

"Shot over."

"Shot out."

Lieutenant Colonel Gibbs watches the target area intently for the soon-to-impact rounds from one of his units. The battalion is on the second day of a 4-day, 96-hour, live-fire evaluation conducted by TRADOC Combined Arms Test Activity (TCATA). After 9,730 rounds and 96 hours, the issues that TCATA will address in their test report are:

- Can a battalion commander effectively command and control the restructured 32-gun battalion?
- Can a bifunctional staff effectively support the tactical operations of the battalion?
- Is there a significant difference between the tactical operations of the batteries with two FDCs and five officers versus the tactical operations of the batteries with one FDC, one BOC, and four officers?
- Can the battalion resupply and handle the required ammunition?
- Can the battalion survey section perform the required position area survey?
- Can the battalion communications section lay the required wire lines?
- Are the technical fire direction procedures throughout the battalion adequate?
- Is the DRS troop ration concept adequate?
- What is the element availability to the brigade?

"Splash, over."

"Splash, out."

The rounds are well over — maybe 300 meters or more.

DRS spreads command and control thin — split batteries, spread platoons, seven and more moves a day for each element. The battery commander spends his time in reconnaissance of the 14 plus positions that must be kept ready for his battery to move. The first sergeant spends his time picking up rations and replacement personnel from the brigade trains area and trying to find his way back to the elements which have invariably moved since he left them. The platoon sergeants spend their time with the advance parties preparing new positions.

The two most junior leaders in the four-gun firing element — the platoon leader and fire direction officer — are left solely in charge most of the time. For those junior

officers, the pace is fast, the pressure heavy, the responsibility great, the opportunity for mistakes ever-present, and all of this without the enemy firing back. Most importantly, because the senior NCOs and the battery commander are gone most of the time, the opportunity for the junior leaders to learn from more experienced artillerymen is greatly diminished.

Lieutenant Colonel Gibbs contemplates the myriad reasons that could cause rounds to be off that far. Survey? Because of the frequency of moves, survey is accomplished using hasty survey techniques which undoubtedly have introduced some error.

Bad registration? More likely, no registration corrections are available at all. The battalion is scheduled to fire 2,155 missions. As soon as a unit is in position and ready to fire, TACFIRE will undoubtedly have missions waiting for it which have been in queue. Registrations are at the bottom of the line and rarely does the opportunity arise to fire them in this intense environment.

Bad met data? Met messages come in only every four hours, and weather significantly changes between noon and 1600. In reality, all these factors could have caused the ineffective fire, each one in itself not a devastating error, but taken together, they have caused a less than desirable effect on target.

A quick solution to the problem is fairly simple; the battalion commander directs a halt in the problem play and a registration is fired — an "exercise" luxury that will not always be affordable in combat.

Long-term correction of the problem is more complex, because the problem is caused by our training base and exacerbated by new equipment and new doctrine:

- First, the centralized management and control of both technical and tactical fire direction in TACFIRE has caused us to lose sight of the basics necessary for accurate artillery fire and we have become dependent on the computer. In other words, we are being driven by the computer rather than our driving the computer to help us accomplish the job more efficiently.

- Second, our junior leaders are not trained to cope with the environment they find in DRS. At USAFAS they are trained to be technicians in the 13F and 13E MOSs. They learn how to perform technical "mechanical," step-by-step tasks in a "go," "no go" environment. They learn *how* very well. They learn *what* and *when* only partially. They very rarely learn *why*.

- Third, too much emphasis is placed on the ARTEP as the only standard for performance for an artillery unit. As a commander's tool, the ARTEP is valuable in ascertaining the proficiency of the various functional areas of his unit, under conditions which can be controlled, using events which occur one at a time, or single

	Eight-gun battery FDC/BOC configurations	
	FDC element	BOC element
Gunline supervisors	1 platoon leader (LT) 1 platoon sergeant (E7)	1 platoon leader (LT) 1 platoon sergeant (E7)
Supervisors	1 fire direction officer (LT) 1 fire direction sergeant (E6)	(The platoon leader uses the BOC as the element's command post.)*
Major equipment	1 M577 1 Battery Display Unit (interfaces with TACFIRE) 1 FADAC 1 AN/VRC-47 1 AN/VRC-46	1 M577 2 AN/VRC-46s
		*The BOC has a limited manual fire direction capability which can be used in emergency conditions. It is manned by three enlisted personnel.
For batteries with two FDCs, each FDC element has the same personnel and equipment as shown in the above FDC element.		

thread. It allows the commander to gauge his unit's weaknesses as well as its strengths, to design a training program based on his findings, and to train to overcome the weakness he has found. It is not unlike the way in which most good coaches train their athletic teams. A football coach, for instance, trains his receivers on a series of individual tasks performed under set conditions, such as catching the ball, running patterns, blocking, etc. He may set standards for each of these tasks and develop a training program to assist his players in overcoming the weaknesses they encounter while trying to reach the standard. But game time is different. Different standards are expected for the players when they are put under a load where many things happen at once. A coach might demand that a player catch 98 out of 100 balls in practice where he has to concentrate on only that one task. But in a game, he must concentrate not only on catching, but also on running the pattern correctly and competing with a defender for the ball. Under those conditions, a performance of 66 out of 100 might be superb. The coach will know what is good and what is bad, because he will evaluate the performance and qualify it subjectively using his own judgment, in light of the conditions that existed at the time.

Importance of DRS

If DRS were just a "clear alternative" organization for the artillery — as it is for the rest of the Army — then the managerial problems which manifest themselves in DRS would be more easily dealt with in the slow, methodical way which we have always used. But the fact is that the eight-gun, split battery, constantly moving for survivability, is the future of the Field Artillery. We will field the eight-gun battery and, as it stands now, employ it in much the same way that the 32-gun DRS battalion is

employed. It is important to realize that when we do go to the eight-gun battery concept, that managerial problems with delivery of fires will manifest themselves and must be dealt with using new techniques and new methods of training. DRS, *per se*, does not cause these problems; rather, it surfaces a problem which before has been cushioned and absorbed by a more forgiving, slower paced environment with more experienced personnel available for supervision. The solutions to these problems must be as broad and far reaching as the change in the organization itself.

New techniques

For a fast moving lethal situation in a TACFIRE environment, the precision registration of today is a liability. As a matter of high priority, quick fire communication links must be developed between the new family of radars or some type of laser device to enable us to perform a two- or three-round mean-point-of-impact or high-burst registration. Sufficiently developed, these procedures could allow us to obtain and retain current registration corrections quickly, without the benefit of current met data.

With new improvements in survey (PADS and APPS), in providing meteorological data (FAMAS), and providing real time velocity error (velocimeter), it is probable that the need for frequent registration will diminish. Until that time, however, we cannot abandon the basics of providing accurate fire for effect data to the elements.

New training

Certainly the technical aspects of the job are important, but an effective manager must also know *what* technical tasks to perform, *when* they are to be performed,

and, most importantly, *why* they are performed so that he can arrange his priorities when the situation is not the routine one to which he has been accustomed. We must strike a balance between the field and USAFAS, between technical skills and managerial skills, which will allow our junior officers to become not only technically competent but also, more importantly, effective managers and decision makers. With the DRS employment doctrine, the chances of young officers acquiring these skills through the osmotic process grow less and less. The learning environment that existed in the slow-moving six-gun battery will fade with new doctrine and, with it, the opportunity for experience gained from observing the senior officers and NCOs will also disappear. It is certain that if an officer does not acquire the skills as a lieutenant, he will not have them as a captain, and so on. More than ever before, the fast moving pace of DRS dictates a return to the basics of good field artillery. Even though we move fast, shoot fast, and operate with a sense of urgency, we cannot do these things to the exclusion of leveling bubbles, boresighting, maintaining current registration corrections, and all the little things that invariably compound one another to cause ineffective fires. In training, DRS cannot be swallowed whole; rather, a steady, methodical, slow moving concentration on the basics must be obtained and then incrementally expanded into the faster moving, spreadout environment of DRS.

New training environments

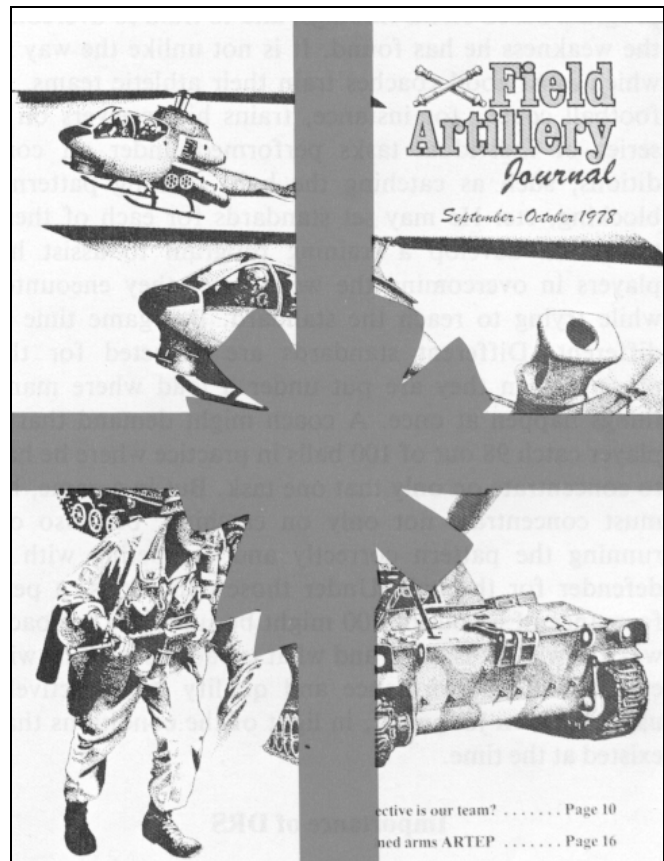
In football, both the training and the game are important. They complement one another. So, too, in the artillery the ARTEP is important because it provides one of the essential building blocks in the training of a unit and bringing the individual sections to proficiency. But use of the single thread ARTEP should not preclude other evaluations. Battalions must be subjected to a load that simulates real "game" conditions. The intensity must be present, the pressure of having a lot to do in a short amount of time must be present, and performance must be evaluated with a good deal of circumspection on the part of the commander.

Things change under game conditions and they should, because decision makers are forced to set (and often revise) their priorities, streamline their operations, and, in some cases, completely abandon things they would do in a less intense environment. But, unless individuals are given the opportunity to train for these things and to learn from their mistakes, they will surely be ill-prepared if they ever have to do it for real.

The echo from the last round fired from the only 32-gun battalion in the United States Army has long since fallen silent on the dusty Texas plains. But the

lessons learned from the 7,000 plus rounds fired are still being evaluated to learn where the weaknesses exist in the TOE and doctrine of the organization. One lesson, however, readily presents itself: The 32-gun battalion is not unlike most other artillery organizations which we have fielded, in that, to accomplish our mission, we must be careful not to violate the basic building blocks of sound artillery doctrine. To make the whole effective, we must perfect ourselves in the practice of the parts; or, as Plutarch wrote almost 1,900 years ago: ". . . many things which cannot be overcome when taken together yield themselves up when taken little by little." ❏

CPT Darrell Morgeson is assigned to the Analysis Division, Gunnery Department, USAFAS. He wrote the pattern of analysis for Phase II of the DRS and spent eight weeks observing DRS testing.



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by COL James F. McCarthy Sr. and MAJ Jim S. Hutchinson

(Art by Phillip Jackson)

You are a Warsaw Pact tank battalion commander moving toward the US forces. Suddenly, several thousand meters before you were supposed to meet any resistance, you come under heavy artillery fire. You order your units to increase their interval and speed, but the devastating artillery fires move with them. As your units "button-up," tactical aircraft start strafing your lead elements and air defense weapons. The artillery has badly damaged your air defense radar system and is obscuring the vision of your air defense gunners and your drivers. Your battalion slows to a crawl when, from hidden positions, attack helicopters strike at your flanks.

You are being engaged by the simultaneous fires of three different fire support means, and your unit is being destroyed. How did this happen?

The 25th Infantry Division Artillery has been developing a concept known as the Aerial Fire Support Team (AFIST). The purpose of the AFIST is to combine all the fire support means available into one decisive, coordinated combat force. It consists of specially trained pilots, aerial observers, FIST chiefs, fire support officers, naval observers and/or forward air controllers (FAC), combined into a fire coordination unit so that all available fire support means can be planned, requested, coordinated, and directed from one

or more observation helicopters. The AFIST — the pilot and aerial observer — are cross-trained to function as a team, both in operating the aircraft and in coordinating fire support.

Division artillery aviation assets and the air cavalry units are best suited to perform AFIST missions. The AFIST can attack enemy forces at maximum weapon system range and can reduce the enemy's strength by attrition as he nears the main battle area. In the event of enemy penetration or flanking action, the AFIST, with the guidance of the maneuver commander, can move quickly to the threatened area to coordinate all fire support assets. In a situation requiring massive coordinated fire support, a typical AFIST consists of two helicopters with aerial observers and another helicopter which serves as the control aircraft with a fire support officer and FAC on board. This gives the commander the advantage of having a highly mobile fire support team with excellent communications that can coordinate and direct all fire support assets from various positions while maintaining visual contact with the enemy.

Because of the shortage of aerial observers, the 25th Div Arty has concentrated on training its aviators to direct artillery and mortar fires, naval gunfire, and tactical airstrikes, as well as familiarizing them with fire support coordination. To assist these specially trained

pilots, Div Arty developed an Aviation FIST Handbook, a 5- by 8-inch handbook designed to fit on the kneeboard of the pilot and assist him in many aspects of fire support. The handbook is a quick reference, with the cover sheet (figure 1) serving as its index. All aspects of directing fire support have been simplified. An example of this is the artillery/mortar request for fires (figure 2). The call for fire has been broken down into three transmissions, and all the pilot has to do is fill in the blanks and circle the appropriate abbreviations. After some basic aviation officer refresher training and a short class on the handbook, the div arty pilots have achieved and maintained a very high level of proficiency in adjusting fire.

Certainly, the AFIST is not designed to work in all situations, but is another lethal combat tool. The important things to remember about AFIST are that its organization can be tailored to the mission, it can perform fire support coordination functions while in

close proximity with the enemy, and it is highly mobile with excellent communications. With well-trained crews and sound tactical employment, AFIST has the mobility, flexibility, and capability to be extremely effective against fast-moving armored forces and will have a place on tomorrow's battlefield.

Because of the importance of the AFIST, there is a lot of concern about the consolidation of div arty aviation assets into the division aviation battalion as recommended by the Aviation Requirements for the Combat Structure of the Army III study (ARCSA III) which is being implemented during FY79 and FY80. This change applies to all divisions except the airmobile. If there is not a training and working relationship between the proposed division artillery support platoon and division artillery, this change could limit the flexibility and capability of div arty to accomplish its mission. The integration of the aviation section into the fire support team is an extremely complex and time-consuming

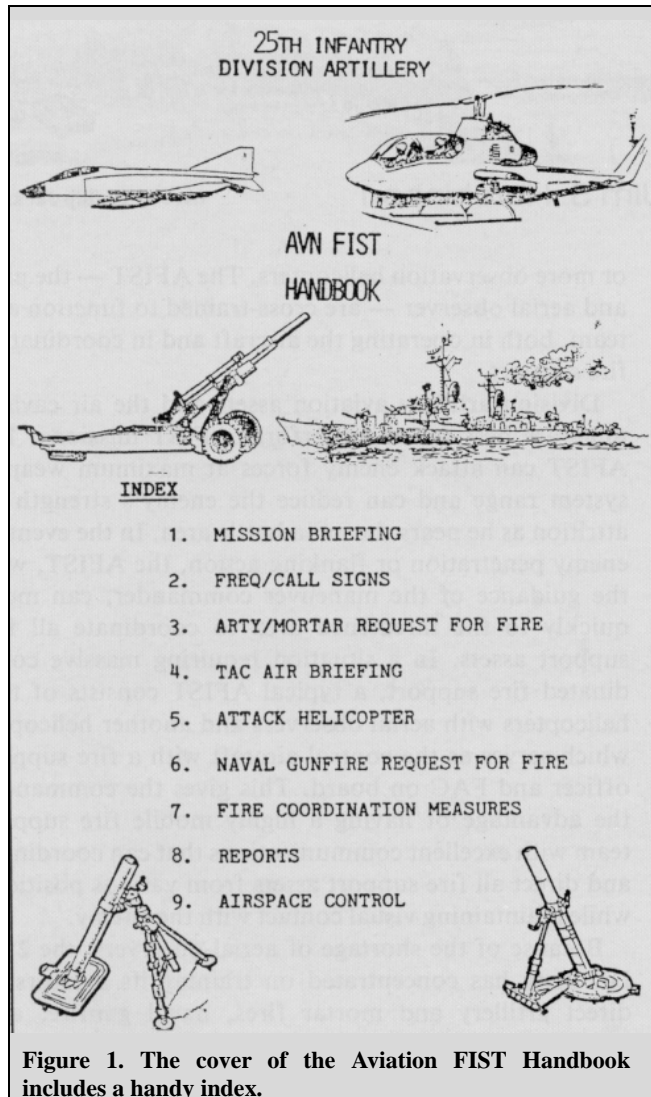


Figure 1. The cover of the Aviation FIST Handbook includes a handy index.

Artillery/mortar request for fire

1st transmission:
 _____, this is _____; (AF,FFE, registration, destruction), (BP, btry, bn), over.

2d transmission:
 (Grid _____, from _____ R/L _____ + or - _____)
 (Direction _____, GT, reference line _____)
 Description _____, over.

3d transmission:
 (H/A)*, (Ti, ICM, VT, SMK, WP)*
 (AMC,TOT _____)*, (request TOF, splash)**

*HE, PD, Btry fires when ready is standard.
 ** Request if needed.


Message to observer
 _____ Fires I/E, #rds I/E
 _____ Adjusting battery
 _____ Change to request
 _____ TOF

Figure 2. The artillery/mortar request for fire form.

process, but one that is essential for maximum fire support combat power. When combined with a well-trained crew, the OH-58 helicopter with its multi-radio configuration and mobility could provide the decisive edge on tomorrow's battlefield. What may have been overlooked in the reorganization of the aviation assets in the Army is the capabilities of the AFIST and the unique training problems associated with this team.

First, FM 1-15 greatly understates the capabilities of the aviation section. The fire support team not only calls for and directs artillery, but it simultaneously requests, coordinates, and directs the entire spectrum of fire support described earlier. On the modern battlefield, much of the conflict will be fought well forward of the main battle area (MBA) with massive fire support. It is probable that between 20 and 30 artillery batteries and two or three attack helicopter companies will be operating in support of a division, along with an allocation of 50 to 100 close air support sorties. This combat force could be augmented with naval gunfire assets. The complexity of integrating all of these fire support means into one decisive combat force that is able to operate not only in the MBA, but also well forward, would require a totally coordinated effort by the pilots, aerial observers, fire support officers, forward air controllers, and maneuver commanders. In short, the concept — that div arty aviation assets are primarily used to adjust artillery — is outdated.

To accomplish the expanded and complex functions of fire support from one or more OH-58s demands a great deal of cross-training in addition to other job

training. During flight, the observer or fire support officer must be able to monitor aircraft gauges and warning/caution lights, watch out for and clear the aircraft of obstacles, navigate, and communicate both inside and outside of the aircraft. He must be familiar with the limitations and systems of the aircraft so that he can assist the pilot in every way possible. Conversely, the pilot needs to know, at a minimum, how to communicate with, coordinate, and direct an array of fire support assets. In critical situations, when the FIST chiefs or aerial observers are not available, the pilot may have to perform all of the fire support functions. Certainly, the potential limiting factors to the use of helicopters in a mid-to-high intensity environment are well known, but the AFIST remains a lethal combat tool for the commander's use. In order to maximize the effectiveness of this tool, the div arty support platoon should be placed under the operational control of division artillery. Maintenance, supply, and administrative functions would remain under the division aviation company. In this way, the economies brought about by the ARCSA III Study would still be realized without degrading the ability of the section to perform its mission. 

COL James F. McCarthy Sr. was the 25th Infantry Division Artillery Commander when this article was written. MAJ Jim S. Hutchinson was the 25th Infantry Division Artillery Aviation Officer and is now attending the Command and General Staff College.

Engineer support to the Field Artillery

Field Artillerymen are generally not aware of the survey support provided to them by another branch of the Army — the Engineer Topographic Battalion, located at field army level. Survey support to the Field Artillery is provided by the Survey Company of this battalion.

The primary mission of this company is to provide a common grid so that all weapon systems in an area of operations are on the same grid as the target acquisition systems or agencies. In areas where no survey control exists or cannot be recovered, survey elements of this company establish the base of a survey network by astronomic observation. Positions established are located to an accuracy of 4 to 15 meters, depending on the number of stars observed and the accuracy required.

The Survey Company is organized and equipped to support a theater army of three corps. In this three-corps

concept, one survey platoon is deployed in each corps area. Each platoon (approximately 40 men) has three survey squads to perform traverse, triangulation, trilateration, and astronomic azimuths.

Using lists of previously established survey control (available for most areas of the world), topographic surveyors recover existing ground control and extend it, at third or higher order, to the general vicinity of division artillery cannon units (usually within five kilometers) and missile firing positions (usually within two kilometers). From these control points, Field Artillery surveyors extend survey to the required positions.

For the near future and for most theaters, support of weapons systems will consume approximately 66 percent of all engineer topographic survey assets.

The *Journal* interviews . . .

1LT Elizabeth A. Tourville

Journal: What motivated you to branch transfer to the Field Artillery?

Tourville: I wanted to join a combat arm and there was no doubt in my mind that the Field Artillery was the best. When the message came out last December authorizing women officers to join the Field Artillery, I wasted no time in signing up. I wasn't dissatisfied with the Ordnance Corps, but somewhere deep down inside me I just wanted to be in the Field Artillery. I haven't been disappointed — the Field Artillery was just what I thought it would be. I talked to a lot of Field Artillery officers at Fort Bragg before I put in my request for branch transfer, and they were all encouraging. The only one who tried to dissuade me was the highest ranking female officer at Bragg — a colonel who has since retired. I had always been fascinated with the Field Artillery since my first introduction to it four years ago in the WAC college junior program.

Journal: With OBC under your belt, what are your perceptions of the Field Artillery?

Tourville: I'm not disappointed with the way the Field Artillery *really* is. Now I can see how our branch fits into the "big picture," what the mission is, and how it fits into the overall scheme of maneuver. My image of the branch before and after pretty much coincide, and I think it is due to the extensive discussions I had with FA officers before I requested the transfer.

Journal: What are your greatest apprehensions about entering a formerly all-male field?

Tourville: I worked closely with male officers before — I was an EOD (explosive ordnance disposal) officer and there are very few women in that field. When I switched to conventional ordnance, I was a unit executive officer and was the first woman officer in that unit. I worked with them for about a year and a half without any problems. And being Class Leader of my OBC class with 191 male officers has been no problem. Initially there were a few who wanted to "test the water," but it wasn't long till they came to think of me as the senior officer in the class, without the modifier "female." I've



(Photo by Jimmy Hysaw)

1LT Elizabeth A. Tourville is the first woman commissioned in the Field Artillery. She graduated from American International College with a Mathematics degree. She transferred from the Ordnance Corps and, because of her date of rank, was Class Leader of FAOBC 10-78. She is currently attending the Pershing Officer Course and is on orders to a NATO assignment in Europe.

seen what they (male students) can do, and they've seen what I can do, and respect, understanding, and approval have resulted.

Journal: Are you bothered that current policies preclude you from commanding a cannon firing battery?

Tourville: In a way, yes. That's the whole purpose of the Field Artillery. Missiles are fine, but cannon is "where it's at." Someday I'd like to have a cannon firing battery, and I assume that if we prove ourselves, DA will change the policy and let us serve in cannon units, even if it is just a Headquarters or Service battery command or on a cannon battalion staff.

Journal: Do you feel that that assignment restriction will hurt your chances for promotion?

Tourville: I wouldn't see where it would hurt me at all. There are plenty of responsible jobs in the Pershing and Lance systems that can prepare me for senior staff and command positions. There are many senior officers today whose entire background is with missiles.

Journal: In OBC you were at least exposed to the types of duties our enlisted women will be expected to perform in CMF 13. Do you see any problems in their fully measuring up to the job requirements in any of the MOSSs?

Tourville: I think small women will have the same problems as small men in 13B, not so much on the 105, but moving some of the bigger ammo could be a problem. I saw men in my class that had trouble meeting lifting requirements. As far as 13E is concerned, I see no reason why women can't do as well as any man. With the 13F FIST, if a woman enjoys field duty, as I do, I think they could handle that without any problem. I really enjoyed working on the OP and calling in fire — I had a *good* time. The only problem I see is for the woman who doesn't like to go to the field, and some of them don't. I personally love field duty.


Journal: Does the fairly "Spartan" environment of the Field Artillery concern you?

Tourville: I went on several field problems at Bragg and never found the situation to be "Spartan." Maybe inconvenient, but not Spartan. I've never worked in an air conditioned office in the Army. Personally, I see no problems in that area, though there are some women for whom field duty would not be pleasant. I think women would not be so reticent about combat arms duty if they knew more in advance what was involved. With ROTC summer camp and Army Orientation Training, women ROTC and West Point cadets are getting to experience service life before they make branch selections. In fact, there are several West Point cadets who are waiting for me to finish my branch training so I can write them my observations. I'm going to give them my reactions. If it encourages them, fine. I'll be glad to see them. If it discourages them, so be it.

Journal: Are you ready to command a Pershing firing platoon?

Tourville: Of course. Yes — I'm looking forward to it. I don't think women will be allowed below battalion staff level, but I certainly would like to be a platoon leader.

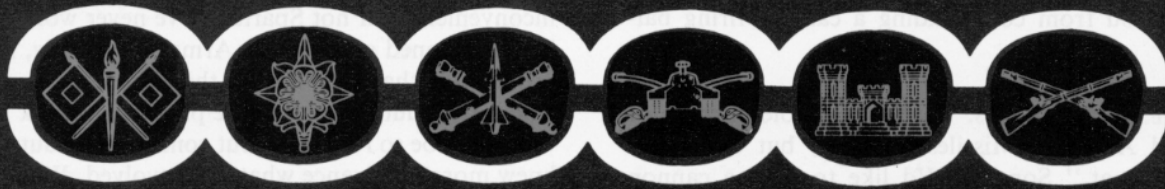
Journal: How do you view your role as "a model" for our enlisted women to pattern themselves after?

Tourville: In my unit at Bragg there were about 20 women and 250 men, and the women did not always need a woman to come to. They developed close relationships with their platoon sergeants and solved most problems at that level — female soldier to male soldier. All I had to do was conduct myself in a ladylike manner and as an officer. Once you earn the respect of the man *and* women, you're all set. I have never consciously sought senior women as role models myself. I am an officer first and a woman second, and I will look to my senior male officers for my "role models" I may need when I get to my unit. I know where I stand as a woman. 

Women

Spotted in a Pentagon office, a sign which reads: "A woman must produce twice the work of a man in order to receive equal recognition." The fine print at the bottom continues, "But that's easy!"

with our comrades in arms



Firefinder radar contract awarded

A \$166-million production contract has been awarded by the Army Electronic Research and Development Command to Hughes Aircraft Company for 106 Firefinder AN/TPQ-36 radar tracking systems to be built within three years.

The Firefinder can pinpoint the location of enemy mortars, short-range artillery, and rocket launchers by scanning the horizon with a pencil-thin electronic beam. The long-range AN/TPQ-37 has been produced by Hughes since 1976 and is used in conjunction with the AN/TPQ-36 to make up the artillery Firefinder system within a division.

Under the contract, 22 radar trackers will go to the Marine Corps and 84 to the Army. Options for fourth- and fifth-year production provide for 82 additional systems.



The AN/TPQ-36 Firefinder unit in the field.

Army buys more M732 fuzes

An additional purchase of 450,000 M732 artillery proximity fuzes was made by the Army following an initial purchase of 402,000 fuzes last year. The supplemental purchase cost approximately \$26 million.

Contracts for the purchases were awarded after safety and reliability firing tests verified that the fuze can be manufactured on a mechanized production line, affording low cost, high reliability, and meeting large volume production requirements.

The proximity fuze fits into the nose of a high-explosive artillery shell. Because it conforms to the standard length of other fuzes, it eliminates the need for a deep fuze cavity and supplementary charge in every shell.

Delivery of the fuzes began in September.

TOW on target from FVS

TOW antitank missiles, fired for the first time from the Army's fighting vehicle system (FVS), scored hits with all nine missiles fired at stationary and moving targets, at ranges up to three kilometers. The performance phase of the firing tests was conducted recently at Fort Irwin, CA.

The FVS is a fast, lightweight, armored fighting vehicle, designed as a companion to the XM1 main battle tank. The FVS is armed with the first TOW missile system that is completely under armor. The twin-barreled TOW launcher is encased in an armored pod on the outside of the vehicle and protected by the same amount of armor as the vehicle.

Recommended reading

Fire support officers will find "Offensive Attack Helicopter Operations" in the July 1978 *Aviation Digest* of interest. The author highlights the less than well known strong points of our current attack helicopters and downplays the Warsaw Pact counter systems which he believes have been exaggerated.

The June 1978 issue of the Army War College's *Parameters* has an 18-page report on the history/evolution of heavy artillery by the late military historian, BG S.L.A. Marshall. The article strongly implies that artillery in Vietnam was ineffective.

William S. Lind and Jeffrey Record, two Senatorial legislative assistants, write in the July 1978 issue of *US Naval Institute Proceedings* that the days of the US Marine Corps are numbered. This fate is predicated on the opinion that the Marines have remained basically light infantry in a time of heavy mechanized forces.

An article on the role of "The Aerial Observer with TACFIRE" in the August 1978 issue of *Aviation Digest* provides interesting aspects of the automated fire control and planning system and its impact on flying Field Artillery observers.

The historical development and current status of Israel's successful use of women in the armed forces is described in the September 1978 issue of *ARMY* magazine. The author is a female US Army Reserve captain, studying at Hebrew University.

A thorough review of the NATO/Warsaw Pact balance is contained in the September issue of the *Armed Forces Journal*. The review is based on extensive research and interviews with General Alexander Haig. The author states at one point that "Even developmental US artillery will still be inferior in rate of fire and barrel life to currently deployed Soviet and modern allied artillery weapons."

The October *Military Review* contains an article entitled "Beyond the no bomb line" in which the author (an artilleryman) states the belief that current fire control measures are a major hindrance to effective and timely fire support coordination. New control measures are required to meet the exigencies of the modern battlefield and to mesh with advances in technology, the author writes.

Grab a copy of the July-August issue of *ARMOR* which contains presentations made at the Armor Conference and capsulizes current Armor thought, doctrine and materiel. TRADOC's General Starry gave the keynote address and his visualization of the "central battle" is especially interesting.

Sheridans on the way out

Army armored cavalry units in USAREUR and FORSCOM are replacing the M551 Sheridan armored reconnaissance/airborne assault vehicle with the improved M60A1 main battle tank. This action is being taken because the M60A1 will increase the firepower and survivability of armored cavalry units in sustained operations and because users expressed dissatisfaction with the M551's reliability.

A phased withdrawal of M551s from cavalry units has been planned to permit an orderly conversion to the main battle tank. Disposition of the M551s has not been determined, but their use as adversary vehicles at the proposed National Training Center is a possibility.

Laser destroys missile

Using a powerful prototype laser beam weapon, US scientists recently destroyed a high speed missile in flight in the first successful demonstration of its kind. The test was disclosed in the journal *Aviation Week & Space Technology* according to the *New York Times*.

The possibilities of laser weapons that are powerful, practical, and cheap enough to use against missiles could revolutionize existing concepts of defense and military strategy throughout the world, the story said.

Patriot scores hits

Patriot, the Army's new air defense missile, created a new chapter in air defense history by intercepting multiple targets in recent firings in New Mexico. Patriot project manager, MG Oliver D. Street III, hailed the multiple engagement as ". . . a major milestone, not only for the Patriot program but for the Army's air defense arsenal." The Patriot program which has included 31 flights, is acclaimed as one of the Army's most successful flight test programs.

"We demonstrated that Patriot can launch, track, and guide several missiles and score intercepts against multiple maneuvering targets in a countermeasures environment. We had said Patriot could do it. Now we have proved it," General Street said.

None of the three missiles, fired only seconds apart from the same launcher, carried live warheads. Missiles passed within killing distance of their intended targets, a full-sized jet and two drones, flying at different ranges and altitudes.

Patriot, being developed to replace both Hawk and Nike Hercules missiles, will be the cornerstone of field Army air defense against medium to high altitude aircraft in the 1980s.



Army ROTC Cadet Donna L. Schoenecker is the first woman to earn the top cadet rating in an ROTC advanced camp. (Photo by SP4 James Stephens)

Female tops 3,000 cadets at ROTC advanced camp

An extraordinary first was achieved recently by Cadet Donna L. Schoenecker when she became the first female to graduate as the number one cadet at ROTC advanced camp at Fort Bragg, NC.

Cadet Schoenecker, a University of South Florida cadet, blazed her way through advanced camp in superb style. She scored 469 points on the advanced physical fitness test, 288 points on her military skills test, and received very high ratings from her platoon leader, platoon sergeant, and her peers. She also won the coveted ROTC RECONDO badge and fired "expert" with the M16 rifle.

Schoenecker is a senior at the University of South Florida majoring in chemical engineering. She maintains a 3.0 scholastic average while financing her own schooling.

When the 3,000 cadets formed up for the graduation ceremony, the number one cadet at advanced camp stepped out with pride. She received the advanced camp commander's award for her accomplishments and an engraved saber at the graduation.

Fort Bragg woman earns jumpmaster wings

Pure determination is what led SP5 Janice Blackwell to become one of the Army's eight women jumpmasters.

Now a member of Headquarters Company, XVIII Airborne Corps, SP5 Blackwell used to watch 82d Airborne Division troops conduct airborne training at Fort Bragg before she joined the Army in 1974 and became interested in jumping herself. She decided to go to basic airborne training at Fort Benning, GA, to see if she could meet the challenge.

"It was during jump school that I decided that if I didn't do anything else in the Army, at least I'd become a jumpmaster," she added. "There was a blackhat (instructor) there who told me I'd never be a jumpmaster because its too hard and precise for women."

She admitted she was prepared to handle any men who might resent her as a woman jumpmaster. "I can deal with any wisecracks they may have because I can understand their skepticism; but, if they try telling me how to do the job, I just won't let them get on that plane to jump."

Blackwell has more than 40 military jumps.

One sergeant said "This is the first time in my 25 years of jumping that I've had a female jumpmaster, but there's absolutely no difference. The job is still the same." (SP5 Cindi Small)

SP5 Janice Blackwell makes adjustments to the parachute of an 82d Airborne Division trooper before a jump.



Female howitzer crews beat firing rates

A study involving 13 female soldiers at Aberdeen Proving Ground, MD, has indicated that women have the ability to load and fire 105-mm and 155-mm howitzers. The 13, all from administrative type Army jobs, scored high marks in the test to determine if women, working as teams, could meet the stated rate of fire of the howitzers.

Test director Frank R. Paragallo said, "Our initial goal was simply to see if the women could meet the rate of fire. They did that with no problem and in several instances exceeded it. The manner in which they did the tasks and the proficiency they demonstrated throughout the test was, I thought, phenomenal. They looked as professional, in my opinion, as any male crew I've seen in the field."

The study, conducted by the Army Human Engineering Laboratory (HEL), was initiated voluntarily as an offshoot of a more comprehensive loading



SP4 Peggy Lee, left, and PVT Minerva Bernier team up to carry a 95-pound round to the 155-mm howitzer during a test of women soldiers' ability to perform artillery tasks. (Photo by Bill Nemeth)



An all-female team rams a 155-mm round into the M114A1 howitzer as trained male artillery safety inspectors watch during HEL tests. (Photo by Gene Bonhage)

and firing rate study for the two artillery pieces. Since the artillery rate study was programed, HEL decided it would be a good idea to see if women could do a portion of the tasks in those artillery MOSs still closed to women.

Paragallo stressed that the part of the study involving women was purposely limited in nature and did not include all tasks required of a regular artillery crewman such as emplacing the weapon or the real manual tasks of unloading ammunition from trucks.

Each of the women was a volunteer, carefully screened for physical fitness. A minimum 110-pound weight requirement was set so that no woman would have to lift more than half her body weight when loading the 155-mm howitzer. The 155-mm projectile weighs 95 pounds and the loading tray about 15 pounds. Two people are required to life the loaded tray. The women had to complete a comprehensive three-week physical training program before the study could start.

This study alone does not prove that women could perform all artillery related functions, but it does open the door for additional studies along these lines, according to HEL officials.

Coed basic expanded

Forts Dix, NJ and Leonard Wood, MO have been added to Forts Jackson, SC and McClellan, AL, as basic training posts for both men and women. The Army plans to eventually open all training installations to both sexes.



(Photo by Herb Thompson)

by MG (Ret) Herbert G. Sparrow

This article is from a script used by then-1LT Herbert G. Sparrow at an officers' call for the 13th Field Artillery in December 1938. Its relevance as a tribute to our patron saint is as appropriate today as it was 40 years ago.—Ed.

Several years ago an item appeared in *TIME* magazine and the newspapers, describing how the captain of the *Queen Mary* docked his huge vessel in New York harbor without benefit of tugs, because of a pilot strike. In its account of the incident, *TIME* magazine (October 30, 1938) said:

What happened was a mighty confirmation of the prestige of British seamanship. No skipper had ever docked so large a vessel unaided. Commodore Irving gave credit where credit seemed due — to the balmy weather and to Saint Christopher, patron saint of travellers. Although he is no Roman Catholic, the Commodore totes two Saint Christophers — one a statue given him by a Galway pilot; the other, a medal from a passenger.

Swore the Commodore: "I spun that medal around and said, 'Well, Saint Chris, how about it?' and he said, 'Go to it!'"

What impressed me most in that account was this: The Commodore had the skill to do a difficult job and do it well. He also had a faith — superstition, if you will, but in any event a belief in some power higher than his — which steadied him while he did it. It may not be an exaggeration to say that that belief may have played as great a part in his success as did his own inherent ability.

When I read that article it did not occur to me that our profession, like Commodore Irving's, is also equipped with a first-class patron saint. In fact, if our regimental commander had not directed me to give a talk on Saint Barbara in December 1938 when I was a first lieutenant, I wouldn't have known then who she was. So I hope that if any of you have been living in similar ignorance, my effort may enable you to speak familiarly of our Barbara — saint, virgin, and martyr.

There is some difference of opinion, not important to us now, as to whether Saint Barbara lived in the third or fourth century AD and as to whether her martyrdom occurred in Egypt, Antioch, Rome, or Syria. Her veneration became common in the seventh century, when the legendary acts of her martyrdom appeared in the accounts of the authors of that time. By the ninth century, she was publicly venerated in both the East

and the West and became a favorite among the Christian populace.

There was a certain pagan named Dioscorus — noble and of great possessions — who dwelt in Heliopolis. He had an only daughter, named Barbara, whom he loved exceedingly.

Fearful lest she be demanded in marriage and taken from him, he shut her up in a very high tower, where she gave herself up entirely to study and meditation. She contemplated the stars of heaven in their courses, and she began to doubt in the idols of wood and stone worshipped by her parents.

Even in her seclusion she heard of the preaching of Origen, who taught a new and holy religion. Longing to know more of his teaching, she wrote to him secretly by a sure messenger, whereupon he sent one of his disciples, disguised as a physician, who taught and baptized her.

Her father Dioscorus was on a journey at this time; but before leaving he had commanded architects to construct within the tower a magnificent bath chamber. Saint Barbara had three windows constructed in this chamber, symbolic of the Holy Trinity, instead of the two intended by her father. When he returned he was displeased and questioned her; when she acknowledged that she was a Christian, he became enraged and drew his sword to kill her. She fled from him to the summit of the tower, where she was wrapped from his view by angels and carried to a distance.

But a shepherd betrayed her by pointing silently to the place of her concealment, whence her father dragged her by the hair, beat her, and cast her into a dungeon, all his love for her being changed to fury. Unable to induce her to renounce Christ, Dioscorus delivered her to the Prefect, Martianus, who, struck by her beauty and intelligence, tried first by argument and then by exquisite tortures to change her mind.

Finally Martianus condemned her to death by beheading, and her father, seeing no hope of her yielding, himself carried her to a certain mountain near the city, drew his sword, and struck off her head. As he descended from the mountain, there came on a most fearful tempest, with thunder and lightning, and fire fell upon this cruel father and consumed him utterly, so that not a vestige of him remained.

In the terms of our profession [artillery] it is apparent that Saint Barbara, through mobility in first escaping from her father, through communications by which she heard of the teachings of Christianity, and through firepower with which she avenged her death, is qualified threefold in her capacity as the patron saint of artillery. (It should be noted also that she was perhaps the first

artillerist, in making a precision adjustment, to achieve a target hit with the first round, without the need for getting a bracket.)

Through her association with the fury of thunder and lightning, Saint Barbara came to be invoked against sudden death in many forms, for it was believed that those devoting themselves to her would not die impenitent, nor without receiving the holy sacraments. This belief was no doubt strengthened by an incident said to have occurred in 1848, when a man named Henry Krock nearly burned to death in a fire at Gorkum. He called upon Saint Barbara, to whom he had always shown great devotion, and she aided him to escape from the burning building and kept him alive until he could receive the last sacraments. For this reason she is often depicted carrying the sacramental cup and wafer. She is the only female saint who bears this attribute.


In her capacity as patron saint of dangerous crafts she has been invoked in behalf of architects, miners, stonemasons, gravediggers, prisoners, and fireworks makers. Her image is often placed on powder magazines and arsenals. As patron saint of artillery she was first recognized by the cannoneers of Lille, France, when in 1417 they were commissioned as "Confreres de Sainte Barbe."

Saint Barbara is generally portrayed standing by a tower with three windows, carrying the palm of a martyr in her hand; sometimes cannons are displayed near her. She is the armed Pallas of antique mythology, reproduced under the aspect of a Christian martyr. The masterpiece by Palma Vecchio is probably the best

known of her portraits.

Other persons have been suggested as more fitting patronesses of Field Artillery — Saint Joan of Arc, for instance, whose skilled employment of mobile artillery won her many victories; or our own American heroine, Molly Pitcher, who manned her husband's gun at Monmouth. But Saint Barbara still holds her place above them all, and it seems likely that she will continue to hold it. Hers was the serenity to face danger without sacrifice of principle — to face it, in short, "Without Fear, Favor, or the Hope of Reward" (motto of the 13th Field Artillery). And hers is the spirit to which we still may look in times of stress.

Not to moralize, but to emphasize, a cardinal human trait, let us recall the doughty Commodore whose courage, skill, and faith combined to bring his great ship safely to the dock. In a tight spot, it is often the intangibles that count. "The ultimate forces of the universe," it has been said, "are not material, they are spiritual."

For this one powerful reason, if for no other, we shall do well to keep alive the legend of Saint Barbara, so that perhaps some day, in some ticklish situation, an able Artilleryman may say, "Well, Saint Babs, how about it?" and she may say, "Go to it!" 

MG (Ret) Herbert G. Sparrow commanded the 1st FA Missile Brigade and XX Corps in the 1960s and was recalled to active duty for three years after his retirement in 1970. He lives in Arlington, VA.

What bothers women soldiers?

In a recent issue of the 3d Armored Division newspaper, the question was asked — "If you could ask President Carter one question, what would it be?" The concerns of female soldiers were reflected in these responses:

SP4 D. D. "Are there steps being taken to improve the uniforms and living conditions for female soldiers?"

SP4 P.I. "Why can't they do something to improve the living conditions for female soldiers? When we go to the field, it's a real hassle because the bathroom facilities are very inconvenient."

SP 4 A. W. "Why can't there be something done to improve the living conditions for female soldiers? There are no special arrangements made to make us more comfortable, even though we are different physically than the men. It's also hard for you to further your education when field problems keep interfering."

Order of Saint Barbara

Awards

The procedures for award of Saint Barbara certificates and medallions have been realigned. The new procedures, outlined below, will ease the administrative burdens and help insure that deserving artillerymen receive the coveted awards.

In addition to the Ancient Order of Saint Barbara award, which is approved only by the Commandant of the Field Artillery School and given principally to people at Fort Sill, the Honorable Order of Saint Barbara award has been established for recognition of artillerymen assigned anywhere other than Fort Sill. Approval authority for this award is any Field Artillery colonel, normally the senior Field Artillery commander for whom the recipient works. The Honorable Order award consists of a certificate and a pewter medallion with red ribbon. Field commanders may request certificates (free) and medallions (\$7.00 each) from the Field Artillery Association, Field Artillery Museum, Fort Sill, Oklahoma 73503. An optional handsome presentation folder to accompany the award is available at a cost of \$7.00 each.

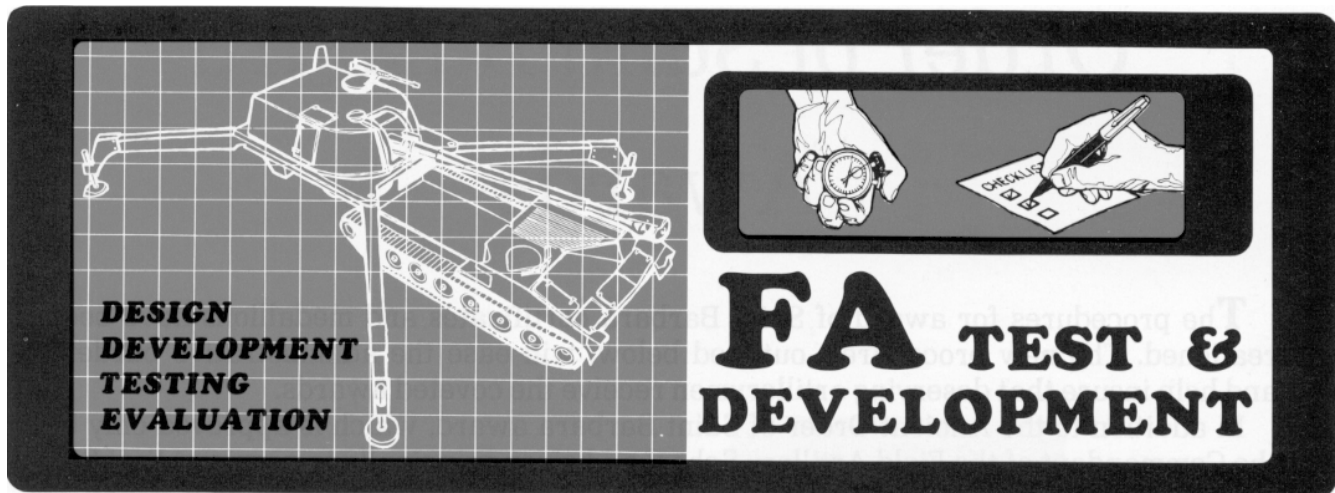
The criteria for award of either the Ancient or Honorable Order award are that the recipient must:

- Have served a minimum of one year in the command, and
- Have demonstrated an outstanding degree of professional competence in artillery matters, and
- Have demonstrated dedicated application of time, effort, and spirit in distinguished service to the United States Army Field Artillery and to the promotion of the esprit de corps and recognition of the Field Artillery as a major contributor to the success of the combined arms team, and
- Have demonstrated the highest standards of integrity and moral character, and
- Possess personal professional qualities that: 1) set the candidate apart from other artillerymen; 2) have generated the genuine respect of subordinates; peers, and seniors alike; and, 3) make the candidate an artilleryman with whom the very best would be proud to serve.

When considering nominees for the award of the Order of Saint Barbara, remember that the purpose of the award is to recognize those personnel who have made a truly significant contribution to the Field Artillery through dedicated, innovative, and prestigious service. It is not intended to be a service award, nor should the order be diluted by induction of other than the most outstanding artillerymen.

Local publicity will detail procedures for Fort Sill commanders to use in nominating recipients for the Ancient Order.

Central manager of the program and the source of both awards will be the Field Artillery Association. Any questions concerning the awards should be directed to the Association.

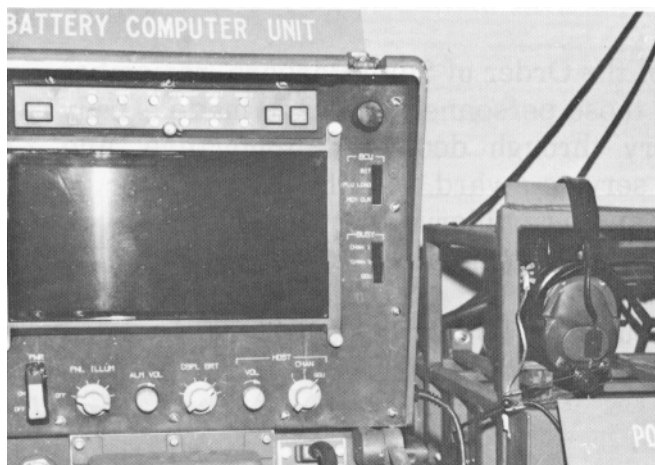


Battery Computer System arrives

One of ten engineering prototypes for the Battery Computer System (BCS) arrived at Fort Sill on 31 August. As a replacement for FADAC and the TACFIRE Battery Display Unit, this model is both a "smart" terminal, capable of receiving fire commands from TACFIRE, and an independent gun direction computer which can compute individual piece corrections for up to 12 guns. Computational time has been dramatically reduced over FADAC and is enhanced through integrated digital communications.

Incorporated in the BCS are Gun Display Units which receive and display the fire commands at each weapon. The gunner and assistant gunner receive a display of the correct firing data for the gun. The chief of section receives other firing data such as the shell, powder lot, fuze setting, and charge as well as deflection, quadrant elevation, and method of control. The Gun Display Unit presently operates over wire via digital communications but may also incorporate the small unit radio in production models.

The Battery Computer System



Current scheduling calls for deployment in the third Quarter of 1981 with final deployment for the Reserves and National Guard by 1985. The BCS is still in its developmental stages, but its current performance is encouraging.

Promising potential in HELBAT 7

The seventh phase of the periodic Fort Sill/Human Engineering Laboratory tests will evaluate some systems and concepts that could prepare the Field Artillery to take maximum advantage of the latest technology.

Human Engineering Laboratory Battalion Artillery Test (HELBAT) 7, will begin at Fort Sill after the first of the year and involve major modifications in ammunition handling, self-location devices for each howitzer, and automatic laying for deflection, quadrant, and fuze setting. A final report of test results will be published in a future issue of the *Journal*. A few of the current test plans are for:

- Ammunition magazine vehicles, new ammunition packaging concepts, and resupply trucks with materiel handling equipment designed to speed up and ease ammo handling.
- A weapon error measurement system to notify crew members and FDC personnel of data fired for comparison with fire commands. Powder temperature and projectile velocity will be sent automatically from the gun to the FDC.
- A computer-assisted Field Artillery meteorological system to provide direct meteorological data to FDCs.
- The FIST vehicle, ground laser locator designators, AN/GVS-5 laser rangefinders, BSTAR radars, remotely-piloted vehicles, and enhanced digital message devices. Also on the "hill" will be the improved TNS-10 sound ranging set.

- A system for two-way digital communication between individual guns and the FDC to speed up operations and reduce human errors.

- Two M109A1 howitzer test beds. One will allow various levels of automation to be explored, including a fully automatic mode in which commanded firing data is automatically set, and the howitzer traverses to deflection and elevates/depresses to quadrant and levels bubbles, all on its own. The second test bed will have its own on-board fire control and land navigation systems, eliminating both position area survey and lay of the battery requirements.

- A real-time plotter in the FDC to display OP and target locations with predicted and "did hit" data for the FDO.

- Communications and command and control of the Army's helicopter-launched HELLFIRE and Air Force PAVE PENNY laser system will be explored. Live Copperhead missions will also be fired.

Most of the systems to be examined are concept prototypes and must undergo a refining process and militarization before being procured and issued. If all systems were to be integrated into the Army, the Field Artillery would be a giant step closer to maximum possible performance.

Extended range for the M109

A developmental program to provide an extended range capability for the M109A2/A3 self-propelled 155-mm howitzer has been undertaken by the Armament Research and Development Command. The objective of the program is to provide a 30-kilometer range capability with the propelling charge to be used with the M109A2/A3. The M203 high energy propelling charge is not compatible with the M127 uun mount on the current M109 and M109A1 howitzers. Modifications to the recoil mechanism, gun mount, and obturator spindle were required. The modified recoil assembly and gun mount were type classified and designated the M178 mount in June 1978 and released for production. The new mount is fully capable of absorbing the recoil forces of the M203 charge.

Testing of the charge in the M185 cannon assembly has been accomplished on a stationary mount and "full-up" testing in an M109 vehicle began in October. A follow-on test is scheduled at Fort Sill during April and May 1979. If all tests are successful, the modified M109A2/A3 using the M203 charge will be capable of a 20 to 25 percent range improvement over current materiel.

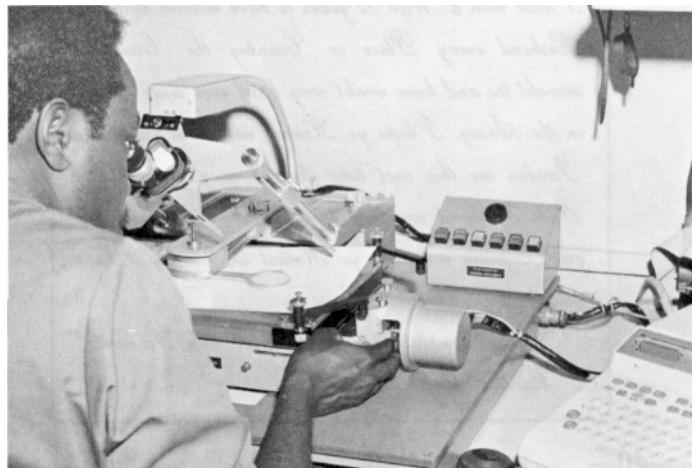
Photolocator test completed

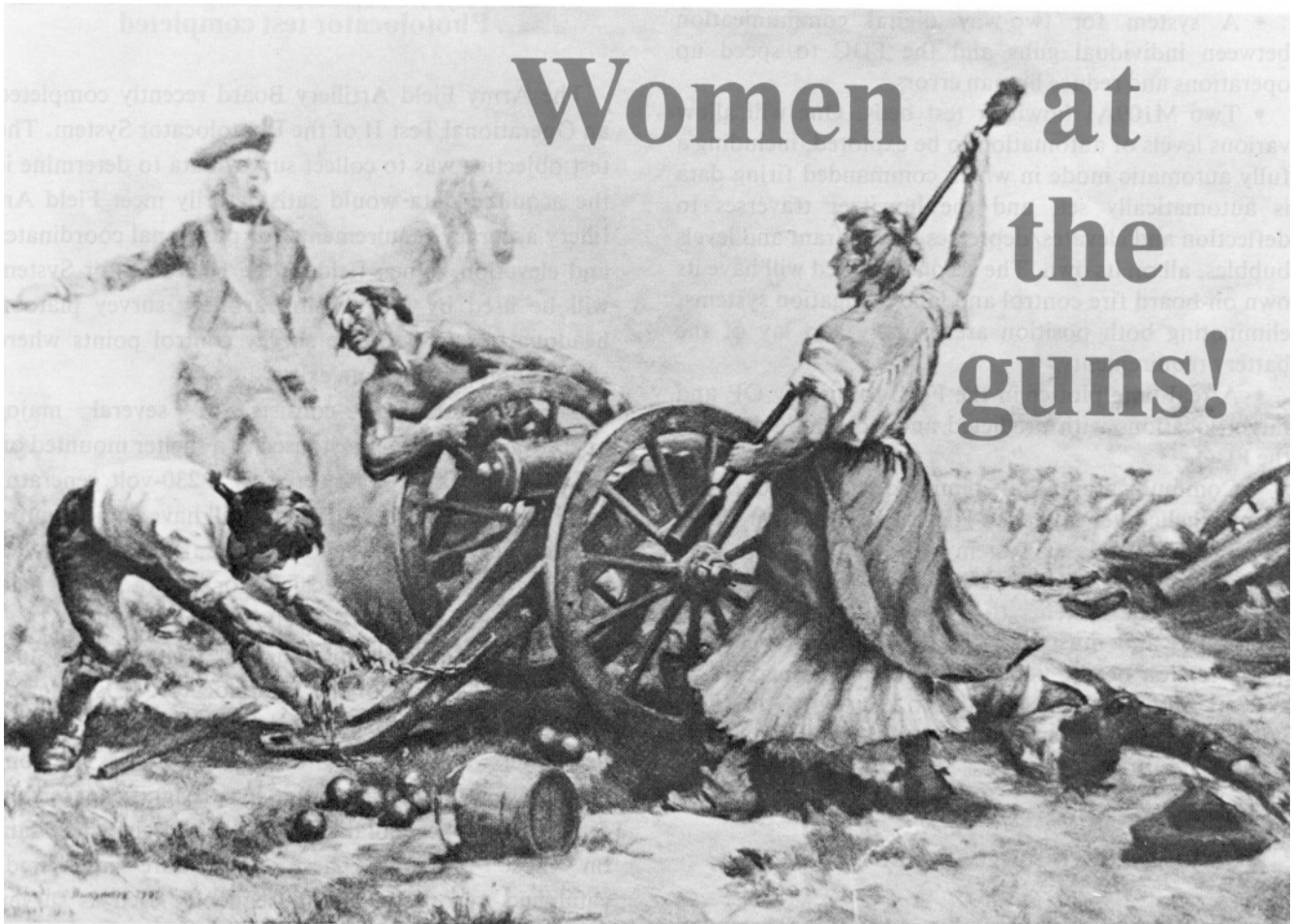
The Army Field Artillery Board recently completed an Operational Test II of the Photolocator System. The test objective was to collect survey data to determine if the acquired data would satisfactorily meet Field Artillery accuracy requirements for positional coordinates and elevation. When fielded, the Photolocator System will be used by the division artillery survey platoon headquarters to generate survey control points where stereo photographic data exists.

The Photolocator consists of several major operational components housed in a shelter mounted on a 2½-ton truck. It is powered by a 230-volt generator set. Inside the shelter, surveyors will have equipment to communicate (AN/VRC-47); calculate surveys (Hewlett-Packard 9825A calculator); store survey data and maps, and control the shelter environment.

The Analytical Photogrammetric Positioning System (APPS) is the heart of the Photolocator. It is a device which interfaces with a calculator operated by survey personnel. The operator uses stereo optics in conjunction with photo imagery to locate significant terrain features and then obtain positional and elevation data on those features. These points are numbered, cataloged, recorded, and subsequently used as survey control points when no other higher order survey control is available. The Photolocator System should provide immediate and accurate starting survey control for division survey operations in virtually any location in the world where tactical forces deploy.

The APPS uses stereo optics and photo imagery to gain positional and elevation data for creating survey control points. (Photo by Bennie Wells)





by COL (Ret) Robert M. Stegmaier and LTC (Ret) Fairfax Downey

Even in earlier days, following the Army was a common practice for women. Many of these women were wives of the soldiers. Martha May, joining her husband in Braddock's Army, best stated woman's position after Braddock forbade their presence on his ill-fated expedition:

I have been a Wife 22 years to have traveld with my Husband every Place or Country the Company marcht too and have workt very hard ever since I was in the Army. I hope yr Honour will be so good as to Pardon me this onct time that I may go with my Poor Husband one time more to carry him and my good Officers water in ye Hottest Battle as I have done before.

*Yr unfortunate Petitioner and Humble
Servant, Martha May*

Women loyally and willingly shared the dangers and hardships of combat. In the early United States Army, artillery was fortunate in having at least three outstanding representatives: Margaret Corbin, Mary Ludwig Hays, and Fanny Doyle.

"Captain Molly"

Margaret Corbin was reared in the savage life of the frontier. At age 5, she was an orphan. Her father was killed by the Indians, and her mother was taken as a prisoner. Married early to John Corbin, she followed him in various campaigns — a privilege granted during the Revolution. She cooked, mended, and carried water to the wounded. Throughout her husband's artillery training, she took such interest that he taught her how to load and fire.

At the battle of Fort Mifflin, 26 September 1776, John Corbin was killed at his post of duty. His gun, to be taken out of action for lack of manpower, was kept on the line when his wife volunteered to take his place.

She continued to serve the piece until three grapeshot wounded her in the shoulder and breast. When Fort Washington was surrendered, Margaret was taken prisoner; for her bravery, the British gallantly recognized her as a non-combatant.

In recognition of her services, "Captain Molly" Corbin is the only woman whose name is registered in the Corps of Invalids in Blair and Egle's *Pennsylvania in the Revolution*. In 1926, her remains were reinterred with honor in the National Cemetery at West Point. Her memorial bears a bronze tablet depicting her firing a cannon.

"Molly Pitcher"

Another artillery wife, Mary Ludwig Hays (better known as Molly Pitcher) shared the rigors of Valley Forge with her husband, John Hays. It was in the battle of Monmouth (28 June 1778) that she gained fame. That day was as hot as Valley Forge had been cold. Water to cool the hot guns and quench the thirst was essential. Mary Ludwig Hays earned her nickname "Molly Pitcher" for bringing pitcher after pitcher of refreshing water to the parched troops. She carried a wounded Continental soldier on her back to the rear — out of reach of hard-charging Britishers. At the cannon, she saw her husband fall wounded. Without hesitation she stepped forward and took the rammer staff from his hands. Resolutely she stayed at her post in face of heavy enemy fire, ably acting as a matross [gunner]. For her heroic role, General Washington himself issued her a warrant as a noncommissioned officer. Thereafter she was widely hailed as "Sergeant Molly."

A flagstaff and cannon have been erected at her gravesite at Carlisle, PA. A sculpture on the Monmouth Battle Monument memorializes her courageous deed.

Fanny Doyle

The third artillery wife to distinguish herself in battle was Fanny Doyle. Her heroism occurred at Fort Niagara during the War of 1812. Andrew Doyle, her husband, was captured at the battle of Queenston Heights. He was


Canadian-born and subject, therefore, by British law, to trail for treason. Fanny, wishing to see her husband, braved crossing the river alone in a rowboat, convinced British sentries she should see her husband, and watched his departure for trial and possible death sentence at Montreal. There and then she vowed retribution.

On 21 November 1812, a hot duel of artillery fire began between the American Fort Niagara and the British-held Fort George. In the midst of the barrage, a woman asked entrance to Fort Niagara and addressed Colonel McFeeley, the commander, as follows:

My name is Fanny Doyle. My husband was taken prisoner at Queenston Heights; they refused to parole him and sent him to Montreal. What can I do in his place?

Unanswered, she found a task when she noticed men rushing hot shot from a furnace to the guns and joined the line. All day she performed that dangerous duty. In his official report, Colonel McFeeley wrote:

An instance of extraordinary bravery in a female . . . I cannot pass over. During the most tremendous cannonading I have ever seen she attended the 6-pounder on the mess house with red-hot shot, and showed fortitude equal to the Maid of Orleans.

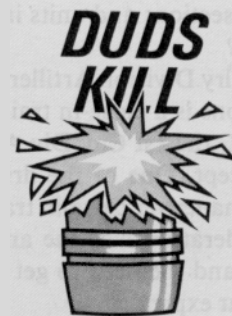
In time of stress and battle, women do admirably and heroically serve. Artillery women, both enlisted and commissioned, now entering artillery units should feel inspired by the above-cited examples of women *manning the guns*. 

COL (Ret) Robert M. Stegmaier and LTC (Ret) Fairfax Downey are regular contributors to the Field Artillery Journal. Colonel Stegmaier has also written articles for other magazines, and Lieutenant Colonel Downey is the author of more than 40 books, including The Guns at Gettysburg, Clash of Cavalry, and Cannonade.

Molly Pitcher has been commemorated on a 10-cent post card, placed on sale September 1978.—Ed.

DUDS ARE BOMBS.

Duds come in many shapes and sizes. Grenades may cause most of the accidents, but there are other explosive devices which kill or injure. Most duds are shells that land in impact areas but fail to go off due to some malfunction. When they are touched, dropped, or bumped they will explode with a deadly force. This may not happen the first time — but it will eventually. After all, shells and ammunition rounds are meant to kill and destroy.



Maximum Readiness

For The Training Dollar

by COL Robert E. Leard

This article was not written with the intention of taking credit for inventing or designing many of the methods and devices described herein; rather, it was written to show how the 1st Cavalry Division Artillery, faced with the age-old problem of getting the most for out training dollar while maintaining a high state of training readiness, adapted existing training techniques and devices to the local situation. These devices were coupled with some new approaches to meet out training needs. What we designed and built was an area, close-in to the motor pools, so that Div Arty could maintain the desired level of training proficiency. Because the area is close-in, we save dollars and training time. The training area described was built at low cost with troop labor; therefore, there are no exotic buildings or devices. All construction was accomplished with an eye to simplicity, ruggedness, and utility. Such an area has merit wherever you are, especially if you do not have field training areas readily accessible.

As you read this article, perhaps you will think of better ways to accomplish close-in training. We look for any ideas to expand or to improve this effort.

All units are faced with the problem, "Manage your training assets to get the maximum benefit from all that is available." These assets — men, money, time, equipment, firing ranges, ammunition, and training devices/aids — will be available in varying degrees based upon various factors. Yet all Army units have the same basic mission — be ready to fight. A unit in Europe with only a small local training area for day-to-day training is expected to be just as (no — even *more*) ready as a unit at Fort Hood, TX, or Fort Carson, CO. How do these units attain and maintain this tactical proficiency? How can you maintain combat readiness when you can't shoot? How can you train your soldiers in the individual skills outlined in the Soldier's Manuals and train your sections and units in the skills demanded by the ARTEP?

The 1st Cavalry Division Artillery believes one answer to these questions is a close-in training area (CITA). In the fall of 1977, the 1st Cav Div Arty began to look at the CITA concept. One of the driving factors was the success of the maneuver close-in training areas at Hood. Another consideration was the anticipated cutback of training funds and the need to get the maximum return from each dollar expended.

Div Arty began developing the CITA with the points shown in figure 1 as the keys to the concept. Notice there is no mention of using the CITA as a substitute for field training. Rather, the concepts of attaining and maintaining proficiency mean "Working the bugs out of your system" prior to moving to the field and expending vast amounts of training dollars and precious time. It is much cheaper to train your howitzer crews to a level of proficiency using a subcaliber device rather than firing service ammunition. An example of training costs is shown in figure 2. The figures represent the cost of taking a 155-mm howitzer battery to the field for one day of training. When a unit expends that kind of money for field training, they must get the maximum benefit possible. The CITA helps do this.

1. The area can be used to train the entire FA system from individual through battery level, to include the target acquisition battery.
2. The area must be accessible and available to all local units and visiting Reserve Component units.
3. Units must make maximum use of simulators, subcaliber devices, and other training aids.
4. The area will be used to attain a level of proficiency prior to expensive field training and to maintain proficiency during periods of austere training assets.

Figure 1. FA CITA concepts.

Distance traveled = 25 miles		
MOGAS:	96 gallons at \$.49 per gallon =	\$ 47.04
Diesel:	243 gallons at \$.38 per gallon =	\$ 92.34
Ammo:	100 rounds at \$72.67 per round =	\$7,267.00
Class IX:	\$102.56 per mile =	<u>\$2,564.00</u>
		Total: \$9,970.38

Figure 2. Cost for a day in the field (155-mm howitzer firing battery).

The CITA also helps avoid the "train-up" syndrome; that is, peaking for the major events throughout the year. Well-planned and consistent use of the CITA will

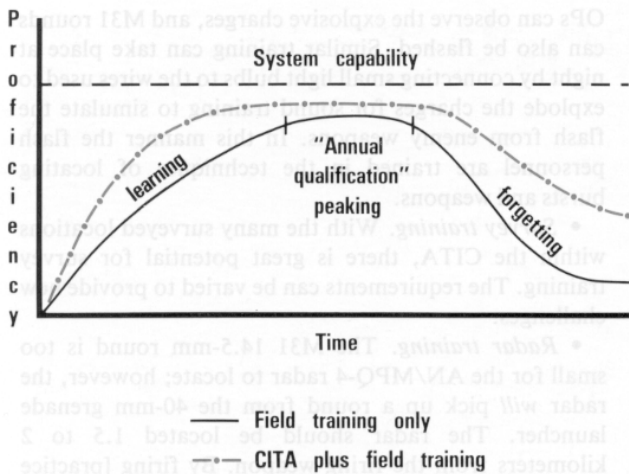


Figure 3. Effect of CITA on the learning curve.

allow a unit to maintain a higher level of proficiency throughout the year, resulting in a more combat ready unit (figure 3). By accelerating the learning curve and reducing the forgetting curve, a unit is able to approach system capability for a greater portion of the training year.

Enough of the theory and "why" of the CITA. Let's get to the "how" of the 1st Cav CITA and see what it contains. *Your* CITA is limited only by your initiative and the resources available. As in any field artillery position, constant improvement should be made.

Where should you locate your CITA? Look for an area with the following features:

- Existing M31 range which can be improved/modified. The area should be about one square kilometer.
- High ground on one or more sides for fire support teams/flash OPs.
- Road network in and around the area.
- Proximity to garrison.
- Space to locate other training facilities around the M31 range.
- Minimum conflict with other ranges and their safety fans (difficulty in using the CITA means a unit will quickly lose interest).
- Varied terrain features and obstructions which will provide variety and challenge in conducting survey operations.

Your immediate reaction to this CITA "shopping list" is probably, "That's a tall order and I'll never be able to fill it." Perhaps you won't, but you will be surprised when you look at the available terrain on your installation. There are many areas which will satisfy most of these desires.

The area chosen for our CITA contained an existing M31 range (figure 4). This range formed the center of the training facilities since the M31 is an excellent subcaliber training device and its use allows exercise of the entire field artillery system.

Several improvements (gleaned from TC 6-40-3) were made to the existing M31 range:

- We constructed a 1:5,000-scale map of the CITA with a contour interval of 10 feet.
- We upgraded targets with troop labor and range control carpentry shop assistance. The targets were arranged in a realistic terrain scene. Plastic 1:10-scale models of Warsaw Pact vehicles were acquired to add realism. These vehicles were moved periodically to provide a target location challenge to the observers.
- Nine additional firing points were surveyed to provide variety for the firing units in the occupation of position. Ideally, firing points would be emplaced all around the M31 range; however, in our case this was not possible because of space and safety considerations. Since the angle T should be kept small when firing the M31, firing points established around the range allow flexibility in locating the observers.
- A simple moving target was installed, using a 1:10-scale tank model and field wire stretched over a pulley system, operated by a soldier in a bunker (constructed

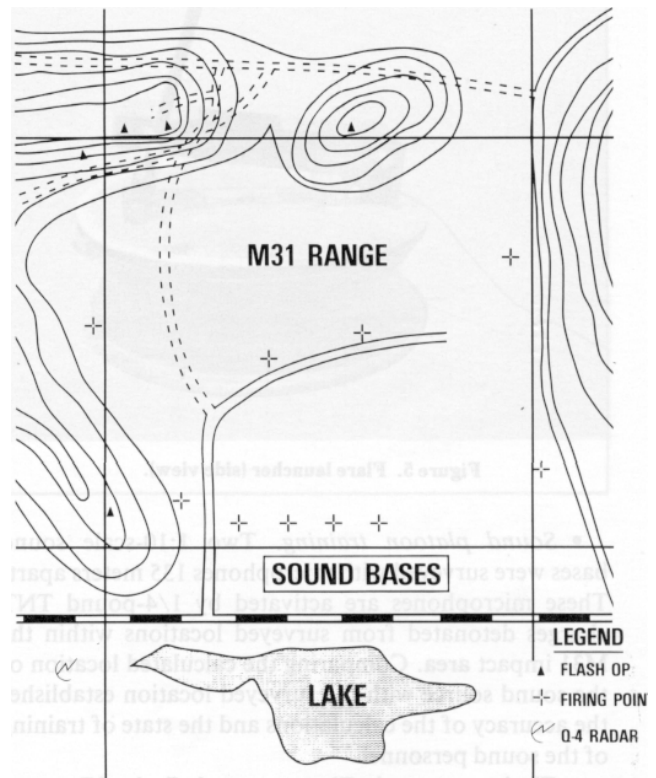


Figure 4. Schematic of CITA.

according to the safety specifications outlined in TM 9-6920-221-13P). The target run is approximately 75 meters long. The target has a long tether attaching it to the main wire so that the tank will turn around when the pulley direction is reversed.

(*Lesson learned:* Keep the grass very short in the vicinity of the target run and paint the tank a bright color so that it can be seen easily! At a 1:10 scale, 500 meters equates to 5,000, and a single tank at that range looks very small.)

- Although the hand-held parachute flare works well for night training with the M31, launching the flare by hand is rather imprecise. Personnel in the 1st Battalion, 77th FA, designed a flare launcher (figure 5). Basic materials are a 1/4-ton vehicle tire rim, a circular sheet of lightweight metal, launch tube, simple "trigger" system, and deflection and elevation scales. This device can be oriented to cause the flare to illuminate the selected target area. The relatively short time of flight of the flare corresponds well with the time of flight of the M31 projectile; therefore, the observer receives realistic training in coordinated illumination procedures.

Now let's move to the area of target acquisition battery (TAB) training, centered around the sound, flash, survey, and radar sections.

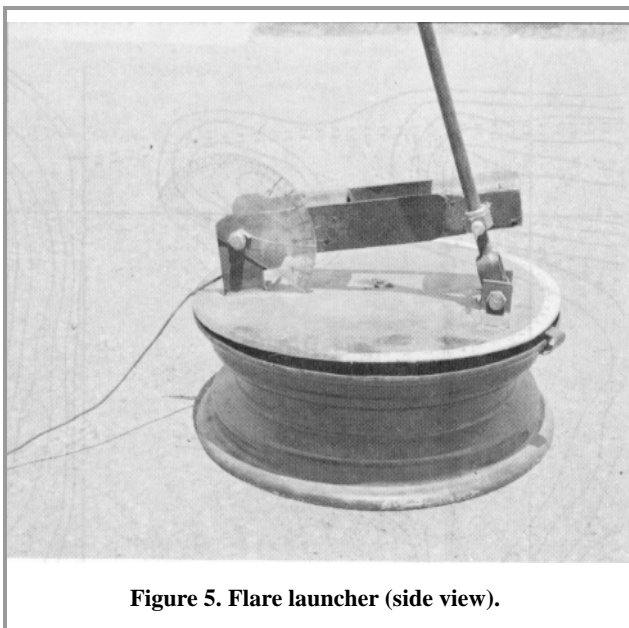


Figure 5. Flare launcher (side view).

- *Sound platoon training.* Two 1:10-scale sound bases were surveyed with microphones 135 meters apart. These microphones are activated by 1/4-pound TNT charges detonated from surveyed locations within the M31 impact area. Comparing the calculated location of the sound source with the surveyed location establishes the accuracy of the calculations and the state of training of the sound personnel.

- *Flash personnel.* Five surveyed flash OPs were established on the high ground around the CITA. These

OPs can observe the explosive charges, and M31 rounds can also be flashed. Similar training can take place at night by connecting small light bulbs to the wires used to explode the charges for sound training to simulate the flash from enemy weapons. In this manner the flash personnel are trained in the techniques of locating bursts and weapons.

- *Survey training.* With the many surveyed locations within the CITA, there is great potential for survey training. The requirements can be varied to provide new challenges.


- *Radar training.* The M31 14.5-mm round is too small for the AN/MPQ-4 radar to locate; however, the radar will pick up a round from the 40-mm grenade launcher. The radar should be located 1.5 to 2 kilometers from the firing weapon. By firing [practice rounds] from surveyed positions, radar location accuracy can be determined by comparing radar data with surveyed data.

Our CITA is located very close to major traffic arteries and tank trails. The TPS-25 can be placed almost anywhere in the CITA where its area of search covers one or more of these roads. Operators quickly gain proficiency in determining types of common military vehicles moving in the area. Training in the location of moving personnel can be accomplished by orienting the TPS-25 radar on nearby ranges which may be occupied.

The entire TAB can be exercised either separately or in conjunction with other artillery units training in the area. Although all of the TAB training is at reduced distances, proper techniques and procedures can be learned for the subsequent full-scale field training.

Immediate plans for improving the CITA include the addition of a remotely controlled moving target to the M31 range and the expansion of the survey training capabilities by establishing additional surveyed points.

The facilities in the CITA allow a battery commander to take his entire battery to the CITA and accomplish a meaningful day of training at minimal cost. This day could logically be terminated by a "mini-ARTEP" on the M31 range. Sections or individuals who are not receiving meaningful training from selected devices could pass through a series of "county fair" stations designed to train the soldiers on the tasks required by the Soldier's Manual.

The CITA is not a substitute for field training or firing of service ammunition; it is a training technique which can be used to help units derive maximum benefit from full-scale field training. 

COL Robert E. Leard is the Commander of the 1st Cavalry Division Artillery.

1978 Redleg Reference

The following is a list of Journal articles and "View From The Blockhouse" items for calendar year 1978 and the issue in which the material was published. The letters (VB) indicate "View From The Blockhouse" items.

Air Operations/Support

FIST Takes To The Air, Nov-Dec.
The A-10 and Fire Support Coordination, Jan-Feb.

Ammunition/Fuzes

Ammo CTA change, May-Jun (VB).
Development of Precision Guided Munitions, Sep-Oct.
Submunitions of the Future, May-Jun.
Training ammo survey, Sep-Oct (VB).

Communications/Electronics

Course prepares Signal Corps officers for tactical units, Mar-Apr (VB).
More range from your radios, May-Jun (VB).
Want a real surprise? Sep-Oct.

Counterfire

AIT training for 82C, Jan-Feb (VB).
Counterfire training films, Jan-Feb (VB).
Counterfire with TACFIRE, Jul-Aug.
DM-60 ready for issue, Jan-Feb (VB).
Field Artillery attack guidance, Jul-Aug (VB).
Final testing for photolocator, Mar-Apr (VB).
Firefinder fielding scheduled, Mar-Apr (VB).
First Firefinder soldiers graduated, Sep-Oct (VB).
Five CFD courses self-paced, May-Jun (VB).
FM 6-161 is out, Nov-Dec (VB).
Improved radar sets arriving, May-Jun (VB).
Met support increased, Sep-Oct (VB).
Multipurpose protractor designed, Sep-Oct (VB).
NCOs . . . Army still needs TARTS, Jul-Aug (VB).
New [met] tables to be printed, Sep-Oct (VB).
New radar courses, Jan-Feb (VB).
Radar observed high burst registration TV tape made, Sep-Oct (VB).
Radar repair course graduates first female soldier, Nov-Dec (VB).
Revised radar maintenance course graduates first class, Sep-Oct (VB).
Revision of meteorological equipment manuals, Nov-Dec (VB).
Savings possible with met, May-Jun (VB).
17C SQTs, Nov-Dec (VB).
Survey Training Indoors, May-Jun.
WO radar course cancelled, Mar-Apr (VB).

Doctrine

Battery Antitank Defense, Jul-Aug.
Comments sought for change to FM 6-20, Sep-Oct (VB).
FM 6-20 is here! Jul-Aug (VB).
Mass—Not Volume, May-Jun.
The First Team and TACFIRE, Jan-Feb.

Equipment

BOC TOE changes, Jul-Aug (VB).
Calculators and the Field Artillery Missions, Mar-Apr.
8-inch howitzer improvements added, May-Jun (VB).
FADAC tapes, May-Jun (VB).
Hand-held calculator change made, Sep-Oct (VB).
Hand-held calculator updated, Nov-Dec (VB).
LCCS for the M109, Jan-Feb.
Lightweight Screening Systems, Jul-Aug.
Longer life power supply developed for calculators, Jul-Aug (VB).
M140 alinement device update, Jan-Feb (VB).
Night compass available, Sep-Oct (VB).
Nonnuclear Lance to Europe, May-Jun (VB).
Range quadrant problems with the M102 howitzer, Mar-Jun (VB).

Rawinsonde PIP, Jan-Feb (VB).
Revision 5A FADAC tapes updated, Jan-Feb (VB).
SIAGL problem surfaces, Mar-Apr (VB).
The M198, Jan-Feb.

Foreign

Evolution of Soviet Self-Propelled Artillery, Mar-Apr.
Fort Sill hosts US and German Army talks, Nov-Dec (VB).
French Field Artillery: An Update, Sep-Oct.
North Korean Artillery — Part One: Background and Organization, May-Jun.
North Korean Artillery — Part Two: Tactics, Jul-Aug.
Soviet SP Artillery Doctrine, Jul-Aug.
Training the German Air Force, Jan-Feb (VB).

Gunnery

Attacking the Irregular Shaped Target, Sep-Oct.
Ballistic Similitude, Jul-Aug.
Calculator advances may solve gunnery problem, Mar-Apr (VB).
FM 6-30, The Field Artillery Observer, Nov-Dec (VB).
FM 6-40 updated, May-Jun (VB).
ICM and the M110A1, Mar-Apr (VB).
Improving the Adjustment of Fire, Jan-Feb.
Munitions Effectiveness, Mar-Apr.
Safety warning for 8-inch cannoners, Nov-Dec (VB).
The New FM 6-40, Jan-Feb (VB).
Use of illumination in supporting TOW/Dragon, Sep-Oct (VB).

History

Fort Sill . . . Fifty Years Ago, Mar-Apr.
John Paul Jones O'Brien, May-Jun.
Redlegs in Blue and Gray, Jan-Feb.
USMA Detachment of Field Artillery, Jul-Aug.
Women at the Guns, Nov-Dec.

Maintenance

Maintenance evaluation packet ready, Jul-Aug (VB).

Organization

A report on DRS, May-Jun.
DRS — Its not-so-obvious impact, Nov-Dec.
The FIST Works, Jan-Feb.

Personnel

First woman FA surveyor, Jul-Aug (VB).
First women commissioned in Field Artillery, Jul-Aug (VB).
First women join Pershing training, Jul-Aug (VB).
First women Lance crewmen, May-Jun (VB).
Met MOS changes made, Jul-Aug (VB).
The Artillerist, Nov-Dec.
The Female Soldier, Nov-Dec.

Research and Development

A War for Science, Jan-Feb.
The Baron Rides Again, Mar-Apr.

Tactics/Strategy

Ammunition Tactics-I, Jul-Aug.
Decontaminate and Survive, Mar-Apr.
Effective Fire Support—A Balanced Combined Arms Team, May-Jun.
Gun and Run, Mar-Apr.
How Effective is Our Team? Sep-Oct.
How Much Is Enough? Mar-Apr.

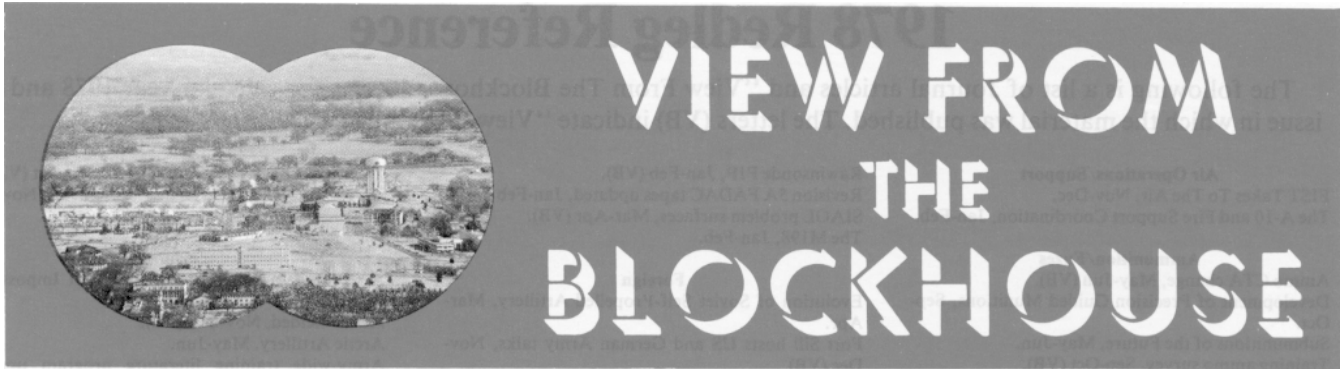
Target numbering system changed, Sep-Oct (VB).
Target numbering system explained, Nov-Dec (VB).

Training

A Combined Arms ARTEP—Its Not Impossible, Sep-Oct.
ADFT fielded, Nov-Dec (VB).
Arctic Artillery, May-Jun.
Army-wide training literature program update, Sep-Oct (VB).
ARTEP changes, Sep-Oct (VB).
CMF 13 job books fielded, Mar-Apr (VB).
Correction — scoring the SQT, Nov-Dec (VB).
Enhancing Combined Arms Training, Jul-Aug.
FADAC Instruction Exported, Mar-Apr (VB).
FAOAC validation, Mar-Apr (VB).
FA officers task lists fielded, Mar-Apr (VB).
FA surveyor apprenticeship program started, Jan-Feb (VB).
Help for M36 chronograph operators, Mar-Apr (VB).
Hipshoot! Sep-Oct.
Intelligence reference packet prepared, May-Jun (VB).
Maximum readiness for the training dollar, Nov-Dec.
Miniature moving target created for M31 range, Jan-Feb (VB).
New correspondence course coming, Jan-Feb (VB).
Nuclear weapons container simulators, Nov-Dec (VB).
OSUT possible for 13E, Mar-Apr (VB).
Questions about Skill Qualification Tests, Jan-Feb (VB).
Practical Partnership, May-Jun.
School searching for fire support handbooks, Nov-Dec (VB).
Scoring the SQT, Sep-Oct (VB).
Self-paced gunnery instruction started, Mar-Apr (VB).
SQT schedule, Sep-Oct (VB).
SQT update, May-Jun (VB).
TEC—The Indispensable Aid, May-Jun.
Terrain Association—Key To Better Map Reading, Jan-Feb.
13F AIT coming, Jan-Feb (VB).
The Safety NCO, May-Jun.
USAFATC—Where It's Happening, Jan-Feb.
What did you do last summer? Nov-Dec.

Other

Artillery Hotline established, Nov-Dec (VB).
At Sea With the Field Artillery, Mar-Apr.
FA Commanders' Conference, May-Jun (VB).
FIST Shootoff postponed, May-Jun (VB).
Leadership—We Want It! We Need It! We Fear It!, Jan-Feb.
Redleg Tankers, Nov-Dec.
Saint Barbara, Nov-Dec.
STANAGS, Sep-Oct.
Symposium highlights Advanced Course, May-Jun (VB).
The Journal Interviews . . .
MG Albert B. Akers, Mar-Apr.
BG A. Bar-David, May-Jun.
GEN John R. Guthrie, Jul-Aug.
CSM Melvin J. Holifield, Sep-Oct.
GEN Frederick J. Kroesen, Jan-Feb.
1LT Elizabeth Tourville, Nov-Dec.
Watch that pocket calculator, Jul-Aug (VB).



Artillery Hotline established

Have a suggestion? Need information? Require assistance? Not sure which office to contact?

The Field Artillery School has established a 24-hour telephone answering service for the express purpose of expeditiously dealing with these problems. You may now call the "Redleg Hotline" from anywhere in the world, any time of the day, at *your* convenience, and be assured that your message will be referred to the appropriate department or directorate and you will receive a rapid response.

Your message will be electronically recorded. To insure that you receive a direct reply, please include your name, rank, unit address, and telephone number with your message. The telephone numbers to call are:

AUTOVON
639-4020
COMMERCIAL (405) 351-4020

ADFT fielded

The Field Artillery School has been developing the Artillery Direct Fire Trainer (ADFT) for several years. It has been a long developmental program and the first devices were shipped to the field 15 Aug 78.

The development of this device began in 1972 as a result of a statement of need from USAREUR. The ADFT is an adaptation of the laser tank gunnery trainer. It is a helium gas laser that is attached to the top of the 105-mm and 155-mm howitzer tubes by a large C-clamp. The device has lead and elevation compensating controls and is activated by an electrical "lanyard." The device uses a 1:10 scale range so actual ranges of 40 to 160 meters represent scale ranges of 400 to 1,600 meters. The ADFT allows realistic year-round training of section personnel in standard direct fire techniques without using service or subcaliber ammunition and without having to move to range areas.

The basis of issue will be one kit to each Active,

Reserve, and National Guard battalion and each separate battery equipped with 105-mm or 155-mm howitzers. Distribution is being made in accordance with an established priority distribution plan. Further information on when your unit can expect its ADFT can be obtained from your supporting TASO.

Any additional information can be obtained by contacting:

Commandant	AUTOVON:
639-1481/3461 US Army Field Artillery School	
ATTN: ATSF-TD-TS	Commercial:
Fort Sill, OK 73503	(405) 351-1481/3461

Safety warning for 8-inch cannoneers

Improperly timed loader/rammers could cause in-bore prematures, resulting in death or injury to personnel and damage to equipment on the M110A1/A2 8-inch howitzers.

Recently, some M201 cannon assemblies have experienced stripped lands. There is good reason to suspect that the problem is linked to out-of-time loader/rammers which may not positively seat the projectile in the forcing cone during the ram cycle.

Without proper seating, the projectile may fall back from the forcing cone against the propelling charge. The propelling charge when ignited will then blow the projectile into the forcing cone, with possibly catastrophic results.

It is strongly recommended that proper loader/rammer maintenance be performed at regular intervals and that each loader/rammer be checked for correct timing as stated in paragraph 2-11 of TM 9-2300-216-10 (Jul 77) prior to any firing exercise.

The above is the subject of a worldwide TWX from product manager, M110E2.

Target numbering system explained

A change has been made to authorized target numbering systems for use among NATO and Quadripartite forces. Change 1 to FM 6-20, to be published in September 1979, will contain specifics, and artillery headquarters will be issuing local implementing instructions in the near future.

The US is returning to the six-place system (two letters followed by four numbers) to facilitate allied operations and to match the TACFIRE requirement for six-place designators. The new system does not include nuclear target numbers.

Under the six-digit system, specific blocks of target numbers will be allocated to specific units to eliminate duplication and to identify the unit that originated the target number.

The two letters will differentiate among the various command levels at division and higher. The four numeric characters will be used at brigade and lower, with numbers 0001 through 6999 belonging to maneuver and 7000 through 7999 belonging to the artillery.

FISTs will use numbers allocated to their supported companies. If more are needed, the controlling liaison or fire support officers will provide them.

Nuclear weapons container simulators

Approval has been granted to develop the plans for 8-inch and 155-mm nuclear weapons container simulators. These container simulators should be used to enhance the realism of training and training evaluation as mentioned in change 1 to ARTEPs 6-165 and 6-365. The plans for the container simulators will insure that the container simulators are built to actual scale, properly ballasted, and meet all requirements related to transportation and tiedown procedures.

At present the plans are being prepared by the Fort Sill Training and Audiovisual Support Center (TASC). Upon completion they will be forwarded to the Training Support Center (TSC), Fort Eustis, for distribution to the worldwide TASC system so that units may order them for use in training. When TSC notifies Fort Sill that distribution has been made, a message will be sent to all units concerned, notifying them that the plans are available at their TASC. Target date is to have the plans in all TASCs by the end of November 1978.

School searching for fire support handbooks

Students of Field Artillery Officer Advanced Course, Class 1-79 are compiling data for proposed FIST and FSO handbooks as part of the FAOAC Battlefield Research Program. Assistance from field units is requested. Please send one copy of any FO, FIST, or FSO handbook published by your unit to:

Commandant
USAFAS
ATTN: ATSF-CA-AT (Handbook)
Fort Sill, OK 73503

Recommendations concerning content, format, size, etc., of handbooks proposed for use by FIST chiefs are also requested.

Hand-held calculator update

Interest in the development of the card programable, hand-held calculators for use in the Field Artillery system is continuing to escalate. Numerous individuals are developing programs to facilitate the computation of various gunnery procedures, and many units are using the calculator to solve the basic gunnery problem.

In this vein, it cannot be overemphasized that the calculators are an alternate/backup method for computing firing data and *not* a replacement for FADAC. A major limitation is the inability of the program to automatically apply meteorological corrections. A ballistic met must be worked and a range-K determined and input into the calculator.

USAFAS is staffing a document which would get the calculator into the system for issue to cannon/Lance fire direction centers, survey teams, and sound and flash units. Further, development of programs for the fabrication of a hardwired "chip" has recently been concluded.

Programs that are scheduled to be on the modular chip include ballistic constants for the M109A1, M110A1, and M102 howitzers, a general gunnery program to include mortars, meteorology, high burst/mean point of impact, Lance, and munitions effectiveness data. Our thanks to the individuals in the field who have contributed to this effort.

View From The Blockhouse

FM 6-30, The Field Artillery Observer

A new manual FM 6-30, "The Field Artillery Observer," has just come off the presses and should now be in all units.

At present FM 6-30 contains only the technical procedures for observed fire. The concepts and operational aspects of FIST are addressed in TC 6-20-10. It is planned to leave FM 6-30 in the field for approximately a year to allow for trial and comment. After this trial period, all comments from the field will be reviewed, and updated information will be published in change 1 to FM 6-30.

The development of FM 6-40 is progressing on schedule with DA print programed for the second quarter of FY79.

Correction — scoring the SQT

The "View From The Blockhouse" item on scoring the SQT (page 43, September-October 1978 *FA Journal*) contained an error on scoring the hands-on component (fourth paragraph, second sentence). The example at the end of the item repeats the error. Each hands-on component scorable unit was identified as being double weighted in relation to the written and performance certification components. This is not correct! *Each scorable unit of the SQT receives equal weight regardless of its components.*

Fort Sill hosts US and German Army talks

The sixth meeting in a series of US and German Army staff talks to improve combined force effectiveness is scheduled for late February 1979 at Fort Sill. These semiannual discussions, now in their third year, are designed to strengthen NATO through improvement of the capability of US and German combat units to operate side by side in Europe by:

- developing joint tactical concepts
- achieving tactical interoperability
- deriving mutual weapons systems requirements
- increasing standardization of materiel

The most recent meetings were in Monterey, CA, last November and in Germany last June. Between formal joint sessions there are many personal contacts to discuss possible areas of cooperation.

Commander, TRADOC, heads the US delegation as the personal representative of the US Army Chief of

Staff. The German delegation is headed by the Vice Chief of Staff, Army. Commander, DARCOM, and his counterparts in the German Army and Ministry of Defense staffs manage hardware cooperative efforts.

Both nations have agreed that cooperation should begin with the development of combined concepts in tactical areas, then progress to a joint definition of requirements to develop interoperable or standardized hardware systems. These talks have resulted in agreement to develop 16 joint tactical concept papers.

Concepts focus on the midintensity battle in Central Europe, principally at the corps and lower levels. A lead nation is established for each action and joint staffing continues until agreement is reached. The final papers are signed by the US and German Army Chiefs of Staff. In April 1978, a joint signature ceremony was held in Washington, DC to sign the Joint Fire Support Concept paper. The US author for this paper was the Assistant Commandant of the Field Artillery School and work on the paper represented a 2-year effort.

As a follow-on to agreement on joint tactical concepts, the two Armies have agreed to formalize the methodology by which a joint definition of weapons system requirements may be derived. The military equipment characteristics document (MECD) is the vehicle for this joint definition.

The purpose of the MECD is to establish a joint user position on the requirement for a system and to insure agreement between the two countries on the nature and characteristics of the system in order to promote the greatest degree of mutual cooperation.

At the June 1978 meeting, COL Charles J. Buel, TRADOC System Manager for the GSRS, presented a briefing on the concepts and plans for a common training program and logistics support for the GSRS.

Extension of the agreement for standardized training and logistics is anticipated adding the United Kingdom and France. These nations have already agreed on the urgent requirement for a self-propelled multiple launch rocket system that is highly mobile, has a rapid rate of fire, and is designed to deliver large volumes of non-nuclear firepower to stem a massive Warsaw Pact attack.

The US/German staff talks provide one of the most successful forums to reach agreement in standardized tactical concepts, tactical interoperability, and mutual weapon system requirements. Both nations consider these talks very important in their mutual efforts to strengthen the NATO alliance.

View From The Blockhouse

maintenance records that are no longer in existence. Techniques used to troubleshoot many of the items have been improved.

The Meteorological Division of the Counterfire Department has embarked on an extensive project to revise the maintenance manuals for met equipment. Arrangements have been made with Electronics Command (ECOM) to expedite the processing of these changes. If you have any ideas for correcting or improving the existing publications, they should be forwarded to the Met Division. Format is not important — you need not use the DA Form 2028 — just get the word to us in any convenient form and we'll write and coordinate the change.



COUNTERFIRE SYSTEMS REVIEW

FM 6-161 is out

The new FM 6-161 has been printed, replacing previous editions of FM 6-161 and FM 6-162, and it includes information on the AN/TPS-58B. Weapon location procedures for the AN/MPQ-4A are still covered in TM 11-5840-208-10. An important change is DA Form 4706 (Radar Visibility Diagram). This change combines the site evaluation chart with the clutter diagram and can be used for all three radar systems. One item which has been clarified is the "clutter" portion of the visibility diagram. This portion of the visibility diagram will only be constructed if the commander so directs as it may violate electronic security regulations. Commanders and responsible staff officers must be familiar with radar employment so as to reduce the vulnerability caused by operational profiles and patterns.

Revision of meteorological equipment manuals

Pending adoption of a new family of meteorological equipment, it is important that the present gear be kept in operational condition. With increasing age, current Rawinsonde systems are becoming troublesome. Breakdowns occur more frequently and in areas that were previously almost trouble free. Many technical manuals used to maintain the present system are obsolete and have errors. Some of these manuals are more than 20 years old and reflect the use of

Radar Repair Course graduates first female soldier

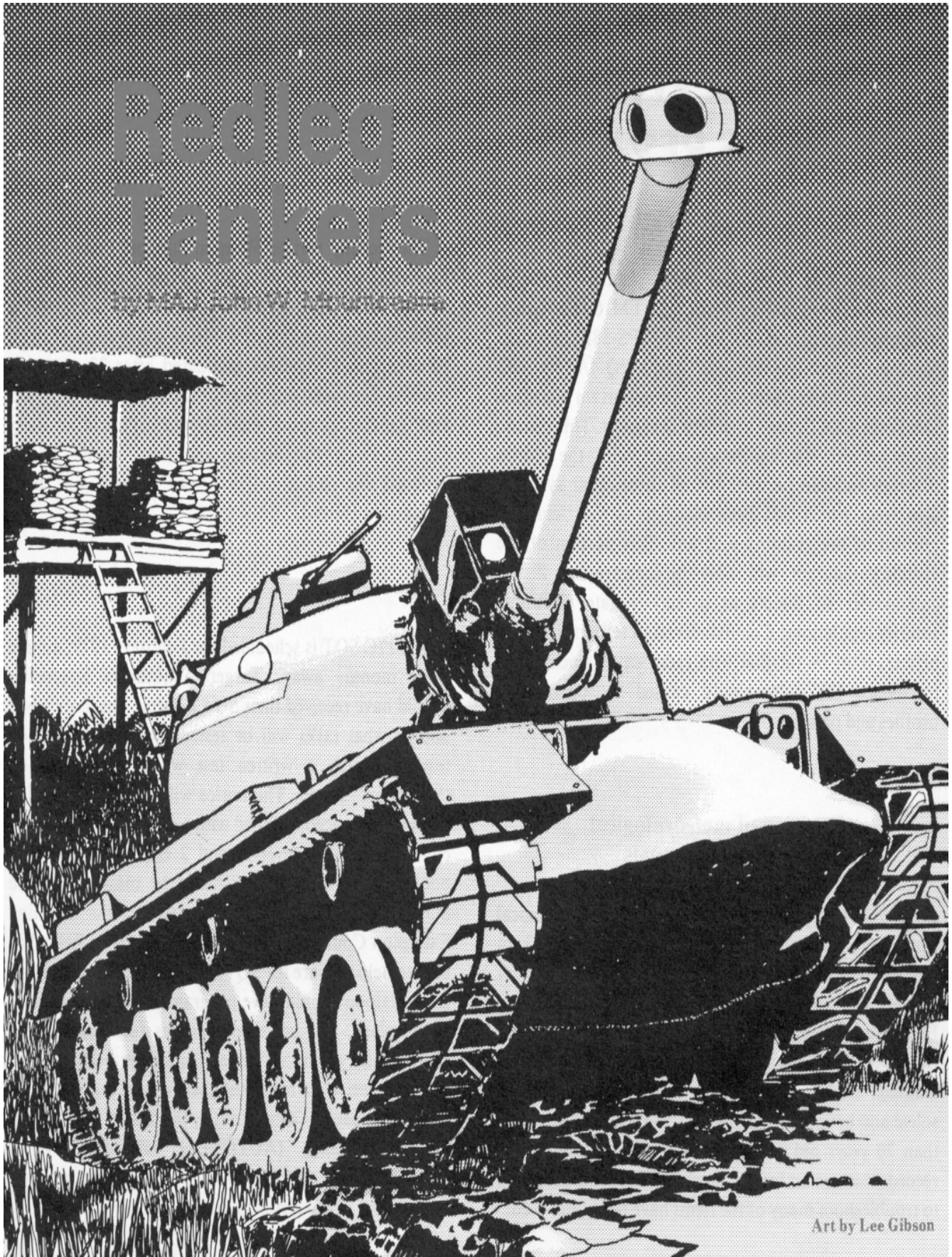
The recently revised Weapon Support Radar Repair Course, 26B10 (formerly the Field Artillery Radar Maintenance Course, 26B20/30) reached a milestone by graduating its first female student. On 10 August 1978, PFC Megan L. Spencer graduated after 23 weeks of training encompassing organizational, direct support, and general support maintenance of field artillery radars. Thus, she became the first female soldier assigned the 26B10 MOS. PFC Spencer has been assigned to Hawaii.

17C SQTs

The 17C SQT is scheduled for February 1979, a mere three months away. Target Acquisition Specialists should have received their SQT notices. This notice will outline what tasks will be tested. Some tasks will be tested through a written test while others will be "hands-on" tested. The notice will also specify which tasks must be accomplished with a certification from the commander. Skill levels 1 and 2 can check their job books to see which tasks should be mastered before SQT time in February. Unfortunately, the Training Extension Course lessons for 17C will not be fielded in time to help prepare for SQT. However, each sound and flash platoon should have programmed texts, hand-outs, lesson plans, and practical exercises furnished by the Field Artillery School. Target acquisition batteries that did not receive or have lost their sound and flash instructional packets should notify the Target Acquisition Specialist Branch (AUTOVON 639-6493/4694 or commercial 1-405-351-6493/4694), Counterfire Department, Field Artillery School.

Redleg Tankers

by KYLE ANDY THOMPSON



Art by Lee Gibson

The short essay which follows grew out of a recent conversation I had with several Field Artillery officers. In the course of our discussion of the various new fire control procedures that came out of the Vietnam conflict. I mentioned that my tank platoon had spent several months performing an indirect fire mission. Although my colleagues had all spent one or more tours with FA units in Vietnam, none knew that tanks had fired in support of artillery units. Hence, this short article.

With the 90-mm HE round that made up part of the basic load of the M48-series tanks, we could fire with a point detonating fuze, a delay fuze, or a time fuze. Our current 105-mm ammunition, however, is not nearly as flexible in this regard. The high explosive, plastic (HEP) round is the only one fired by the M60-series tanks that could be used in the indirect fire mode. As a result of this lack of suitable ammo, the primary mission for tanks (killing other tanks) once again reigns supreme in armor doctrine. With this situation in being, we just may have been the last of a line of "Redleg tankers" that fired missions during World War II, Korea, and, finally, Vietnam.

Moonlight Cannoneers

Darkness came swiftly in the Central Highlands of Vietnam. With sunset two hours past, the heat of the day began to fade. A slight breeze dried the sweat-soaked fatigues of the infantrymen manning the perimeter of the firebase. The night sounds of the dense forest surrounding the position were heard only faintly over the hum of generators supplying electricity to headquarters bunkers. It was April 1967, and American soldiers of the 4th Infantry Division were settling down for another night along the Cambodian border.

Occasionally, the querulous voice of a soldier or the clink of metal striking metal came from a mass of dark forms in the center of the base. The sometimes flicker of a filtered flashlight revealed the outlines of sweating soldiers carrying long shells over their shoulders to five large tracked vehicles. The laboring ammunition bearers made little noise, but spoke in subdued tones as they carried their loads from a stack of shells to other troops on the vehicles. For some time, the bearers supplied the tracked machines with ammunition, moving like so many industrious ants until word was passed that the turrets were full. Moving away from the tracks, the soldiers wearily sank down on convenient sandbagged revetments and, smoking cupped cigarettes in silence, awaited the next order.

As they rested, their lieutenant made his way through artillery pieces to the thin sliver of light that marked the entrance to the fire direction center (FDC). His return soon after signaled an end to the break. The troops mounted the vehicles and assumed their firing positions. Under the red glow of dome lights, they checked the time fuzes on each round of ammunition and waited for firing orders. Within minutes, the order came:

"FIRE MISSION! 15 rounds; HE; deflection, 84 left; quadrant, plus 150; at my command . . . FIRE!"

For five minutes, the elevated gun tubes blasted shells westward into the night sky, toward Cambodia. While crew commanders relayed orders from the lieutenant, gunners checked elevation quadrants, pressed firing triggers, and sang out, "On the Way!" Loaders, stripped to the waist and streaming sweat, bent low as they shoved rounds into the breeches of the elevated guns. Finally, after all the ammunition was fired, crew leaders announced, "Rounds complete!" The sudden quiet, coming so soon after the noise of firing, seemed to echo in the night air.

After a moment, the cry of "Brass!" went up from each gun crew. Empty shell casings were handed out of the vehicles to be stacked neatly in the rear of the position. A few minutes for rest; then the cycle was repeated — loading, firing, and unloading, until 200 rounds had sped westward. Only then did the exhausted crews have time to think of sleep, or of the guard duty they would all pull in the five hours of darkness left before dawn.

The foregoing account would seem to describe an ordinary night in the life of an American field artillery battery in Vietnam. In fact, though, the "battery" was a platoon of M48 tanks! "Artillerymen" of the 3d Platoon, Company B, 1-69th Armor, had just spent another night performing their mission of indirect fire support. As the former platoon leader of the unit, I remember well our efforts to "put steel on the target."

During much of 1967, the 4th Infantry Division Artillery was hard-pressed to provide the level of support demanded of it. By augmenting the firepower of the div arty, we tankers had demonstrated the flexibility that characterizes armor operations. This mission was nearly always performed at night and was in addition to our primary responsibility of supporting infantry battalions operating in the Central Highlands in daylight operations.

The use of tanks in an indirect fire role was certainly not a new idea in 1967. Tank guns had augmented artillery fires in World War II and in Korea. I was aware of this, but was still surprised when told that my platoon would be the test unit for a new and challenging mission. The battalion commander of the 1-69th Armor, then LTC Paul S. Williams, explained that we must exploit our capability to support not only infantry units, but also artillery outfits. All of the "Black Panther" troopers of the 1-69th were solidly behind Lieutenant Colonel Williams in his on-going campaign to convince other commanders that we could do something other than run convoys.

Training began immediately. Using the 1964 edition of FM 17-12, *Tank Gunnery*, and assisted by an artillery officer, the 3d Platoon delved into the mysteries of indirect firing. We learned how to position our tanks,

investigated the M2 aiming circle, and rapidly grew proficient at laying our gun tubes parallel. For the first time in our Vietnam experience, we became truly familiar with the gunner's quadrant and azimuth indicator. NCOs who had given themselves over to the "Co-ax and canister"¹ school took great pleasure in demonstrating their knowledge of fire control instruments gained years before on the ranges at Grafenwoehr. Our firing tables proved to be no problem for artillery FDCs and, after some practice in setting time fuzes on 90-mm HE rounds, the 3d (Redleg) Platoon was ready for its first live fire mission.

Within a few days, we road-marched from our firebase to a site adjacent to the Special Forces camp at Plei Me. There, under the watchful eyes of a 105-mm artillery battery, we took up firing positions. By running the tanks up onto a dirt berm, we were able to measurably increase the angle of elevation at which we could fire.

We fired 100 rounds on the first mission. Our target was an enemy base area in the Ia Drang Valley, 12 kilometers to the southwest. Using our firing tables, the artillery FDC computed the elevation and deflection settings we would use. Area coverage of the target area was assured by providing a second set of figures that we would use after firing the first 50 rounds. The entire mission went off without a hitch, and we were gratified to hear that an aerial observer had reported good target coverage. As neophyte artillerymen, we found that this type of firing called for teamwork, concentration, and physical effort. In addition, the compliments from kibitzing artillerymen of the 105-mm battery boosted the platoon's collective ego.

The business of serving two masters demanded a great deal of both men and machines. Teamwork was essential. In the course of a night's firing, an entire platoon rotated through the loader, gunner, and tank commander positions in order to spread the workload equitably. In spite of the strain, the tankers maintained a positive outlook and took obvious pride in being among the hardest working troops on any firebase. As a platoon leader, I gained priceless experience while operating independently, many miles from our parent unit.

When the division received additional artillery support, we were relieved of our indirect fire mission. As we departed, the Redleg tankers could take credit for performing a challenging mission in a professional manner. It was with a sense of honest pride that we announced to one and all, "Rounds complete!"

Artillerymen should be aware that today's armor units retain the capability to fire in the indirect mode if


Range (meters)	Super elevation (mils)	Drift (mils)	Time of flight (seconds)
3000	57.6	2.2	6.7
4000	97.7	4.2	10.2
5000	149.2	7.5	14.2
6000	212.4	12.6	18.6
7000	289.5	19.3	23.7
8000	386.3	26.7	29.6
9000	523.6	37.4	37.4
9588	731.4	58.9	47.9

To put indirect tank fire into terms a field artilleryman can relate to, the above sample data for the M60 tank firing the HEP 105-mm round is extracted from FT 105-A-2. That round has a muzzle velocity of 731.5 meters per second. For super elevation (quadrant) above 355.6 mils, the vehicle itself must be run up on a berm and a gunner's quadrant used to set the data. The maximum range is 9,588 meters.

Figure 1. Extract from FT 105-A-2.

the tactical situation demands it. The latest edition of FM 17-12 provides tankers with clearly written, illustrated instructions for conducting an indirect fire mission. The round of ammunition that would be employed by tankers equipped with the M60-series tank is the 105-mm HEP-T (high explosive, plastic) round which has a maximum range of 9,603 meters when fired at an elevation of 42 degrees (755.8 mils).

The need to meet any incursion into NATO territory with a heavy volume of long range fires suggests a need for an improved HE round for use by tanks. With a truly effective HE shell with an adjustable fuze, tanks could add the weight of their firepower to the battle long before the first enemy tank came into direct fire range. Consider, if you will, the potential fire support of a number of tank platoons. En route to their assigned defensive positions, these units might pull into preplanned firing sites, load prestocked HE rounds, fire 50 rounds at an assigned area target 10 to 15 kilometers away, and then move out. If properly trained, armor "Redlegs" could put steel on the target while confusing the enemy as to our true "artillery" strength. This would be done in *addition to*, not *instead of*, the tankers' regular mission. It is an idea worthy of some consideration.

What do you think? 

MAJ John W. Mountcastle (Armor) is an instructor in the Department of History at the US Military Academy, West Point, NY.

¹Tanker term for co-axial machine and canister main gun round for attacking enemy at very close ranges.

Should Women Be Used In Military Combat?

"YES"

Sen. William Proxmire (D-WI)

The two objections most often heard to using women in combat are 1) concern for the women's safety and 2) doubts that women can carry out combat duties.

Concern for women's safety, while well-intentioned, is misplaced. Women today are inner city police officers, skydivers, race car drivers and firefighters. If a qualified woman wants to volunteer for dangerous duty, she should be free to do so. It's her decision to make, not the government's, which makes far too many of our decisions for us. The establishment of the all-volunteer force makes military service today a matter of choice, and women are waiting in line to serve.

No one wants to send women into combat, but as one woman testified before my subcommittee, "I find it doubtful that mothers or fathers weep more for their daughters than for their sons."

Certain types of combat duty require a level of strength which many women may not possess, and those women should be deployed elsewhere, just like weak men. But if some women are strong enough and qualified in every other way, there is no reason to exclude them.

Women who now serve in combat-support positions have been trained in defensive combat techniques, for their units could well come under enemy attack. Offensive combat is but one step further. The Army now gives the same seven-week basic training to men and women, including grenade throwing and use of a variety of arms.

The performance of women in past wars proves that women can make a tremendous contribution to our war effort. Women's Air Force Service pilots have trained male pilots in strafing, bombing, tracking and anti-aircraft fire, and during WW II a Russian all-woman fighter unit shot down 38 German aircraft.

Interestingly, the General Accounting Office reports that women lose about one-half as much time from duty as men — including time taken for pregnancy.

The discrimination against women by our armed services is an affront to the American sense of fair play and the ideal of equal opportunity, which our government professes to follow. Until recently women were excluded from such "combat" jobs as missile launch crews in the Midwestern United States.

Combat duty is the traditional route upward in all military services, but women now in the service cannot follow that route. Limiting the women's role is also unfair to the men, who must shoulder all unpleasant duty including very long stretches at sea. Moreover, it is only fair that women be called upon to defend the freedoms they enjoy as U.S. citizens.

We must spare no effort to maintain a strong, lean, efficient and well prepared fighting force. By closing many combat or combat-related positions to women, however, the armed services are weakening our defense effort by refusing to let qualified personnel serve where they are needed.

No less than the Commander of the Marine Training Base at Parris Island, SC has declared that, "there is no reason the female can't fight just like the male." I agree.

"NO"

MG John K. Singlaub (USA, Ret)

The primary mission of the United States Army is to preserve the peace by being instantly ready to engage in combat operations any place in the world. The ability to fight and win battles is too important to the security of this nation to permit the Army to be used as an instrument for sociological experimentation. Until such time as there is some evidence that women can withstand the extreme physical, mental and psychological stresses of battle, it is foolhardy, if not dangerous, to run the risk of reducing the combat capability of our Army by including women in units whose primary mission is to engage in actual combat operations.

This does not mean that there is no place for women in the Army. There are many jobs in the Army that can be performed better by women. The nation can ill afford to ignore or under-utilize the great reservoir of brainpower and skills represented in the women of our nation. There are, however, several important reasons why these highly motivated and patriotic female members of the Army should continue to be excluded from combat units.

First of all, the battlefield is a very physical place. The infantryman, cannoner and tanker are routinely called upon during battle crises to demonstrate great feats of upper body strength to preserve lives and equipment. The tasks of digging for shelter, moving ammunition and changing tank tracks are shared by all members of the unit, including the clerks, cooks and mechanics. All require the muscle structure and exertion normally associated with a defensive tackle on the Denver Broncos' football team. Most physiologists agree that for the foreseeable future far more men than women will be capable of meeting the physical demands of these situations. With women in combat units, the male soldiers would be required to carry an increased share of these critical physical requirements, thereby limiting the units' responsiveness to crisis situations.

In my experience, women in combat have an adverse impact on the male soldiers in the area. Men tend to be protective of women.

During the tree-trimming crisis in Korea in August 1976, many good soldiers were so concerned about their soldier wives or girlfriends or their subordinate women that they left their duty stations to see to their welfare or evacuation to the rear areas. In fact, most of the women soldiers expressed the desire, if not the expectation, to be removed from the potential battle areas.

Another factor which suggests we should not permit our women soldiers to be used in combat units is the image that this would project in the minds of our potential enemies.

At one time Russia and Israel used women in combat roles in their military forces, but both have now made it a matter of national policy that women will not be used in combat again. God forbid that we must go to war to learn the same lesson.

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REDLEG Newsletter

FA officer shortage imminent

The Field Artillery is experiencing a critical shortage of officers, appearing now among available lieutenants and captains, and expected to continue until 1983. The shortfall is due in part to a changing force structure and partly a result of accession patterns since the Vietnam war.

The force structure now calls for more captains and fewer lieutenants than 10 years ago. Drastic reductions-in-force since the Vietnam war and the preference of new lieutenants for other than combat arms branches are contributing to the FA shortage.

According to MILPERCEN, the shortfall in captains is expected to stabilize at about 5,000 Army-wide by 1983 to 1985, if accessions remain constant. The Field Artillery is currently short about 475 captains, which is almost 25 percent of the Army total.

Some side effects of this shortage are:

- Because of overseas priorities, as many as 50 percent of CONUS captain slots will be filled by lieutenants in 1983.
- Company grade officers will be almost prohibited from getting alternate specialty experience on which to base their selection at the eighth year of service.
- On the plus side, lieutenants' chances for promotion will increase.

MILPERCEN is working on a solution to the problem.

Field Artillery commanders must give serious consideration to the long term effects and possible loss of respect by our combined arms team comrades that might result from selecting the expedient or "garrison organization" instead of the more difficult "combat ready" assignment of officers.

The branch is embarking on some major materiel, doctrinal, and organizational changes that require commanders' due attention. If the FIST organization, TACIFRE system, and counterfire doctrine are not given adequate personnel fill, these important improvements could be stillborn.—Ed.

Enlisted preference statements

Everyone has a favorite place to be stationed, or some place they don't want to be stationed. What can you do to improve your chances of being stationed at the post of your dreams? Submit a DA Form 2635, Enlisted Preference Statement. Everyone knows that the "dream sheet" is a waste of time and the "machine" is going to send you as far as possible from where you want to go. This idea is as far from the truth as anything can be—the Field Artillery Branch does try to give you your choice.

When you fill out your next preference statement, be realistic in your choice of assignments. Fort Lauderdale might be a great city, but it has a decided lack of Artillery. Remember, there has to be a need for your grade and MOS at an installation before we can assign you there. Any of the divisional posts are available. There are also installations which have brigades and offer some chance for assignment.

For overseas areas of preference, Panama has only one battery, Alaska one battalion, Korea and Hawaii have one division each, and Europe has a whole bunch. There are no requirements in Japan or Australia. Based on the current troop distribution, the tours are usually two long overseas tours to one short foreign assignment.

In the Remarks Section of the DA Form 2635, be sure to list any pressing reasons why you should be assigned to the post of your choice. Family medical problems, exceptional children, and aged parents or in-laws are examples of valid remarks. The fact that you own a home in Lawton is not a mandatory reason for assignment to Fort Sill.

Make sure your next preference statement is forwarded to MILPERCEN through personnel channels. The MILPO enters information from your preference statement through SIDPERS to change the preference data on your DA Form 2 and to update computer data on file at MILPERCEN.

If you didn't get your choice this time, keep on trying. Branch will keep on trying to get you there. However, if you never submit a preference statement, you may never get there. (SSG Rick Martin)

Reup bonus changes made

Changes in the following Field Artillery and FA-related MOSs for selective reenlistment bonuses (SRB) took effect October 1: SRB 4A for MOS 21G; SRB 3A for MOS 17C and 17K; SRB 2A for MOSs 15D, 15E, 15J, 21L, and 82C; SRB 1A for MOSs 13E, 13F, and 17B.

General guidelines for payment of an SRB are that soldiers reenlist between one and six years service. A bonus is computed by multiplying a soldier's base pay by the number of years in a reenlistment. The figure is then multiplied by the SRB number. Specific bonus qualifications are contained in AR 600-200 and in AR 601-280.

Soldiers reenlisting with between six and 10 years service, who meet the above regulations guidelines, qualify for a B code SRB if they hold one of the following MOSs: SRB 1B for MOSs 13E, 17C, 21G, and 82C.

Caution issued on officer separations

Officers and local military personnel offices have been cautioned by MILPERCEN that the final decision on exactly when an officer's service obligation ends can be made only by his career management division.

Policies governing service obligations are complex in some cases, especially when officers incur additional service obligations as a result of schooling. Some obligations run concurrently while others must be served separately.

Determining an officer's exact eligibility for release from active duty is not a simple matter of looking at the record and following basic regulations. There is room for error, according to MILPERCEN, and an officer should be able to buy a house or make a commitment for a job without having to change those plans because of an error in what he thinks is his release date.

Senior enlisted increase planned

The Army plans to increase the number of senior enlisted soldiers on active duty between 1979 and 1984. The plan calls for 15,000 more soldiers in grade E4 and above, with 8,000 of these in grade E5 or above.

The increase is due to more soldiers being qualified for reenlistment than anticipated and a requirement for more soldiers in grade E4 and above. While the plan increases the number of senior soldiers, it does not add to the Army's total size. The increase is expected to provide more stability and lower turnover rates, making more soldiers available for assignment to units.

By keeping additional experienced soldiers on active duty, the Army will also reduce the number of recruits its needs by more than 11,000 annually. This will allow the Army to maintain present standards and reduce recruiting and training costs during a time when the number of young people eligible for service will be declining.

Early outs announced

Soldiers slated for separation from active duty between December 12 and January 7 will be eligible for early discharge according to DA officials who announced that separation dates for these soldiers will be between December 11 and 15.

Adjusted separation dates (unless a soldier chooses to keep his original date) are:

Current separation date	Target separation date
December 11-23	December 11
December 24-30	December 12
December 31-January 5	December 13
January 6	December 14
January 7	December 15

A heavy pre-Christmas workload may not allow all soldiers to separate on their target dates. Depending on local workloads, availability of port calls, and other factors, soldiers will be separated as close to target dates as possible.

Regular Army officers are not eligible for early release, and local commanders may retain non-regular officers until normal release dates if necessary for unit operations.

The early outs do not apply to officer and enlisted Reservists in special training programs or to personnel subject to "flagging" action.

Redleg Newsletter

Women welcome in most CMF 13 jobs

Only three MOSs in Career Management Field 13 remain closed to women. These are 13B, Cannon Crewman; 13E, Cannon Fire Direction/Fire Support Specialist; and 13F, Fire Support Specialist.

RQTs are out

Reenlistment qualification tests (RQTs) will no longer be used to determine eligibility for reenlistment according to the Department of the Army.

A reenlistment applicant must achieve 60 percent or higher on the Skill Qualification Test (SQT) or a percentile score of 11 or higher as shown on USAREC Form 10A. Soldiers who fail to attain those scores may be extended for the purpose of retesting. Those who fail after retest will not be permitted immediate reenlistment.

Soldiers for whom no SQT is available will be considered eligible to reenlist if recommended by the unit commander, but they must be certified as qualified in their MOS by their commanders.

Personnel for whom there is an SQT available but who have not taken the test will take an on-demand test in accordance with chapter 5, AR 600-200. The on-demand test will be administrative processing. This includes request for waiver and reenlistment to meet service remaining requirements.

In cases where the Army does not furnish appropriate test scores in time to permit normal administrative processing or reenlistment extension, MILPERCEN will determine reenlistment eligibility. This includes cases where a soldier has not achieved 60 percent or higher on the SQT and is required to extend or reenlist before the expected receipt of USAREC Form 10A.

Stripes only temporary for drill sergeants

Only temporary appointments to Staff Sergeant will be given to SP6s assigned to drill sergeant duties instead of lateral appointment to "hard stripes," according to MILPERCEN.

The new policy allows for acting noncommissioned officer status only during drill sergeant tours and required reversion to specialist rank upon reassignment to primary MOS. This policy has applied to E5s in the past but not to E6s.

Reservists sought for active duty in some MOSs

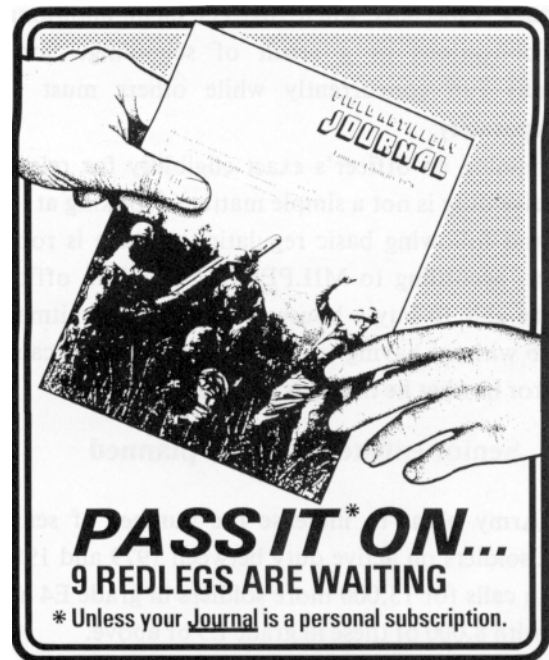
Army Reservists are being sought to enter active duty in space-imbalanced MOSs. Most of the authorized slots to be filled are overseas. The following are Field Artillery and FA-related MOSs for which Reservists are eligible if they meet qualifications in AR 135-210: 15D, 15E, 15F, 15J, 21G, and 21L.

Specific questions concerning Reserve enlistments onto active duty may be directed to MILPERCEN at (703) 325-8386 or AUTOVON 221-8386.

Fitness statement required for officer applicants

Enforcement of weight standards by the Army has been extended to include a statement of fitness on applications for Regular Army commissions and warrant officer appointments. These statements must verify that the weight and physical fitness standards in AR 600-9 are met.

Applicants for officer candidate school and those being considered by boards will also be required to submit statements. The requirement for statements is scheduled to be included in regulations soon.



What did *you* do



last summer?

by Mr. Lee Hunter

The multicolored lines on the 101st Airborne Division Artillery operations room wall chart stopped suddenly at 22 May 1978. This is when the 101st Div Arty battalions shifted from regular white, black, and gold training cycles to support summer training of Army Reserve components.

Emphasis on Active Army assistance to Reserve Component (RC) units has steadily increased in the last few years, and this summer the 101st Airborne Division received the primary mission of supporting RC training. All four Div Arty battalions were involved with commitments ranging from Camp Santiago, PR, to Fort McCoy, WI.

Before the summer schedule got underway (31 March through 2 April), an all-artillery, mutual-support, live fire

exercise (Starfire 78) exploded on the range at Fort Campbell, KY. The four Div Arty battalions were airlifted into position by Chinook helicopters to repel an enemy invasion. A 155-mm howitzer unit was flown in from Fort Bragg, NC; the 1st Battalion, 136th Field Artillery, convoyed its 105-mm howitzers from Evansville, IN; and the 138th Group arrived from Frankfort, KY.

On 4 June, a task force of 175 soldiers from the 101st deployed to Virginia to support the 116th Infantry Brigade (Virginia Army National Guard). Battery B, 2d Battalion, 320th Field Artillery, moved 70 people, four howitzers, five gamma goats, three jeeps with trailers, a FADAC, and other equipment to Camp Pickett to train

with the 1st Battalion, 246th Field Artillery. Training assistance requested by the Guard included setting up a 14.5-mm subcaliber range and an introduction to the fire support team (FIST).

CPT David R. Hazels, S3 of the 2-320th FA, said that B Battery got in some good training itself while demonstrating operating procedures for the Guard. "Guard soldiers were energetic and quickly picked up techniques that were new to them," said Captain Hazels. While at Camp Pickett, Screaming Eagle Artillerymen also helped the Guard conduct an Army Training and Evaluation Program (ARTEP).

Battery C, 2-320th FA, sent 31 people to Fort Drum, NY, in mid-June to support artillery battalions of the 26th Infantry Division (MA/CT Army National Guard). No guns were taken on this mission since only fire direction personnel, FIST personnel, and a howitzer section chief were requested.

Another training team of 15 soldiers from B/2-320th FA worked with Pennsylvania Guardsmen of the 1st Battalion, 107th Field Artillery, at Fort A. P. Hill, 8 through 22 July. The team consisted of a howitzer section, FDC personnel, a fire support team, and an NBC NCO.

Battery A, 2-320th FA, took four guns and 72 soldiers to Fort McCoy, WI, to support the 33d Infantry Brigade (Illinois Army National Guard). One of the jobs there was to conduct firing battery ARTEPs for the Guard.

The four Artillery battalions of the 42d Infantry Division (NY Army National Guard) were assisted by 30 people of B/2-320th FA at Fort Drum during two weeks' annual training in August. Training assistance included FADAC instruction, FIST demonstrations, and assistance from firing battery section chiefs, a mess sergeant, a motor sergeant, a TAMMS NCO, and medics. Personnel from the 101st Div Arty set up a demonstration firing position with camouflage and perimeter defense and conducted briefings. Aid was also given in organizing and administering Skill Qualification Tests.

C/3-319th FA was divided between two RC battalions at Fort Drum for two weeks in June. One battalion was about 50 percent strength, but after two weeks of instruction and practice in basic fire direction, communications, observation, and other procedures became proficient enough to successfully complete fire missions.

The other part of C Battery worked with an advanced battalion that needed only minimum assistance. Teams from the battery gave FADAC classes, FIST training, and helicopter loading instruction and helped with an ARTEP.



C Battery, 1-36th FA (Ohio ARNG), measures the muzzle velocity of its howitzers with chronographs operated by the 101st Airborne Div Arty at Fort Campbell. (Photo by Lee Hunter)

Another battery of the 319th FA accompanied the 1st Battalion, 503d Infantry, in a 500-soldier task force to Fort Chaffee, AR, 8 through 22 July, to train with the 39th Infantry Brigade (Arkansas National Guard), the affiliated National Guard Brigade of the 1-503d. Several soldiers who went to Fort Chaffee last year volunteered to go back this summer. "The different location, regular training hours, and concentration on single objectives are a welcome change of pace for us," said one soldier.

In June, SSG Paul M. Dye, C Battery, 1st Battalion, 321st Field Artillery, headed a seven-man FIST in Camp Santiago, PR, to train forward observers for the 92d Infantry Brigade (Puerto Rico Army National Guard). There were about four hours of classes per day plus live mortar firing. "We didn't use the FIST concept but stuck to simpler, more familiar procedures because of communication limitations," Dye said. The Guardsmen were mature, worked hard, and had good attitudes, but there was a definite language barrier. Dye believed that firing proficiency improved 200 percent in two weeks and wished the training period could have been longer.




Live firing was the most enjoyable aspect of the Reserve Component training evaluated by the 101st Div Arty. (Photo by Joe O'Shia)

Most of the 1st Battalion, 321st Field Artillery, worked with cadets at West Point during June, July, and August.

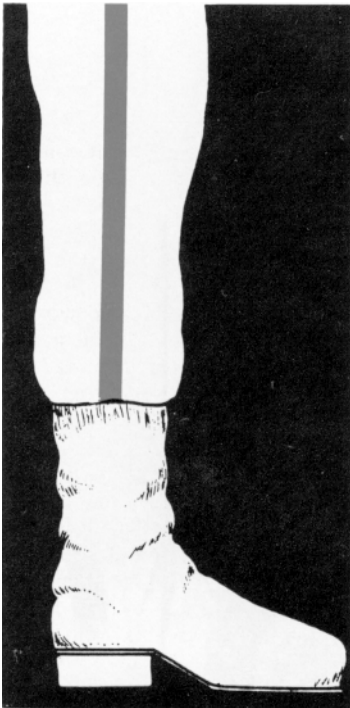
The 2d Battalion, 31st Field Artillery, conducted mutual support training for two 8-inch SP battalions — the 5-28th and 3-92d, Reserve units from Ohio — from 18 June through 1 July at Fort Campbell. CPT Arthur J. Keating, S3 of the 2-31st, remarked, "Our job was twofold — to assist with training and evaluate performance. We gave classes in camouflage, FADAC operation, maintenance, and other subjects and offered daily critiques. The best rapport was achieved when evaluators were matched with equal ranks."

The 1st Battalion, 136th Field Artillery (Ohio Army

National Guard), arrived at Campbell in July for two weeks of training with the 2-31st FA. SSG James T. Bailey, reenlistment NCO for the 1-136th, said that weapons firing was a big attraction for Guardsmen.

LTC J. W. Woodbeck, Reserve advisor with the 101st Airborne Division, said, "Three times as many soldiers came to Fort Campbell for their annual two-week exercise as did last year and we anticipate more major units next year. Maximum return on the taxpayer's dollar is the bottom line of Active Army and Reserve Component mutual support programs." 

Mr. Lee Hunter is assigned to the Public Affairs Office, Fort Campbell, KY, as a public information specialist.



Redleg Review

CONTROLLING FUTURE ARMS TRADE, by Anne H. Cahn, Joseph J. Kruzal, Peter M. Dawkins, and Jacques Huntziner, McGraw-Hill, New York, 1977, 197 pages, \$5.95 (paperback).

Whenever the term "arms control" is used, most people think of deadly nuclear weapons. Factually, the millions killed in some 30 conflicts since 1945 perished through the use of deadly conventional weapons. The sophisticated, powerful conventional weapons sold abroad today, especially the "smart" ones, if used widely, could multiply that figure tenfold with never a nuke dropped.

Today's arms market belongs to the buyers, with cash and carry the rule rather than the exception. Today's purchasers aren't interested in old F-104s or MIG 19s; they're buying state-of-the-art equipment, from TOW missiles to MIG 23 fighters.

With the co-production contracts and licensed foreign production of armaments, weapons technology is being spread around the globe. In weapons sales, the concept of free market economics clashes with regional and world stability. With no controls, the wealthiest of the emerging powers may soon possess military capabilities beyond their defense needs.

Why control nonnuclear arms sales? Looking beyond the obvious moral

implications, major considerations include the tremendous economic and political impact that local high-intensity wars in Africa, the Middle East, South Asia, and South America can have upon the rest of the world. Unnecessary local arms races waste resources and can sprout agitating rivalries and possible conflicts in areas heretofore peaceful, as well as bring about superpower confrontations.

In three essays, this book explores the problems of arms trade and offers solutions from several perspectives. The three views are, based on background, an American civilian arms control analyst, a professional American Army officer, and a French defense expert.

There is no clear delineation between hawk and dove; in fact, the authors agree on many points, most notably the pressing need for some form of control, especially on systems capable of delivering nuclear weapons. Their solutions vary from producer controls to regional restraints plus various combinations of both.

In offering their solutions, the authors' major shortcoming is inadequate consideration of the influence of Soviet arms sales and military aid on Western-initiated arms control. Many of the authors' solutions collapse when the Soviet factor is added.

The real forte of *Controlling Future Arms Trade* is its thorough analysis of the present arms export situation which is a complicated combination of military, economic, political, and ideological factors.

For officers preparing for attache or MAAG duty, for students of the Command and General Staff College, and especially for students of the Industrial College of the Armed Forces, this volume could be of immense value in understanding this perplexing, challenging problem.

ILT John L. Plaster is Public Affairs Officer for the Minnesota Army National Guard.

THE TRUTH ABOUT THE PANAMA CANAL by Denison Kitchel, Arlington House Publishers, New Rochelle, New York, 1978, 240 pages, \$8.95.

That old chestnut about one man's truth being another's fantasy is hardly applicable here. Mr. Kitchel has done a remarkable job in dissecting the legal, military, foreign policy, and economic concerns that had their confluence in the recent signing of a new Panama Canal treaty.

His commentary on the historical origins of the Canal is particularly enjoyable and informative, especially his treatment of the political machinations that turned a French failure into an American engineering marvel. He intertwines the political, social, military, and economic aspects of the Canal as he traces its growth and development. As the discussion enters the 1970s, however, the objective analysis becomes somewhat less objective, but, then, this is to be expected. The recent debate over the Panama Canal question elicited strong opinions from most Americans, and Mr. Kitchel is no exception. He thinks we have been railroaded and supports his positions with a reasoned analysis. Everyone will not agree with his position, but all should be impressed with the depth and detail of his supporting research.

Too many of us, I would suspect, are like the gentleman in a 1976 *New Yorker* magazine cartoon, who said to his friend, "What's wrong with me? For 30 years I never gave a thought to the Panama Canal. Now suddenly I can't live without it." For those who wish to assume a more reasoned position, the background information and analysis needed is available in *The Truth About the Panama Canal*.

MAJ Terry A. Girdon is an instructor with ROTC at Princeton University.

THE KAISER, WARLORD OF THE SECOND REICH, by Alan Palmer, Charles Scribner's Sons, New York, 1978, 276 pages, \$14.95.

Kaiser William II — Was he the man who began World War I, the archetypal Prussian militarist, a war criminal? Or was he a scapegoat for the failures of pre-World War European society and politics. Or was he something in between?

William II's heritage devolved from two ancient European dynasties, whose strengths and traditions were in many ways the direct opposites of each other. His mother was the daughter of Britain's Queen Victoria and William was Victoria's first grandson. His father, Friedrich III, was a relative liberal among Prussian princes. In spite of this liberal background, Palmer finds that William II was in many ways more influenced by his grandfather William I, a more traditional Prussian, and Otto Von Bismarck (the Iron Chancellor), than by his parents.

One gathers from Palmer's study of William II's childhood and early life that the young prince might have been better off being reared under either one influence or the other — British liberalism or Prussian authoritarianism — rather than both, for one is constantly struck by the contradictions of his character as revealed by his actions. One moment, he is preventing Bismarck from using force to crush the workers and social democrats; the next he is touting one-man rule and posturing like some barbarian warlord.

Palmer sees the young prince's struggle to overcome the physical handicaps of a withered arm and a poor sense of physical balance, brought on as a result of birth defects, as more significant. The author believes that the psychological result of these struggles was the Kaiser's need in later life for approval and acceptance, as well as a need to prove his manliness to both himself and the public. Palmer suggests that the Kaiser may have inherited mental as well as physical defects.

In contrast to his not unsympathetic portrayal of William's childhood, Palmer describes the adult prince as a shallow individual, flitting from one interest to another, dabbling amateurishly in such

diverse fields as art, naval architecture, and diplomacy. The author describes William as a "jack of all trades, master of none," and leaves no doubt that he considers these imperial forays of little value.

The author thinks that the Kaiser might have been a prisoner of his generals, especially Hindenburg and Ludendorff, during World War I. Though he might disagree with the two generals, the Kaiser could not remove or overrule them because they had become more indispensable in the German mind than himself.

No one is likely to claim that William II was the genius of the age but surely his failings were no worse than those of some of the other world leaders of that era whose actions contributed not only to the causes of World War I but also to the failure to secure a meaningful peace after the war.

CPT John R. DeTreville is currently serving in the 82d Airborne Division Artillery.

ENCYCLOPEDIA OF AVIATION, edited by Reference International, Charles Scribner's Sons, New York, 1977, 210 pages, \$14.95.

The *Encyclopedia of Aviation* is not only an excellent source of reference material, but it also provides much enjoyable reading.

Its wealth of information — over 700 entries of aircraft, engines, people, and places and more than 250 photographs — make it a valuable source of aviation knowledge. The titles of entries are listed in alphabetical order and the cross-referencing is logical, making it easy to find answers to specific questions. Every nation with any significant contribution to aviation is included in the work.

For anyone in need of information about aviation in general or a specific flying machine, the book is a worthwhile investment.

COL Warren E. Norman is the Senior USAF representative at Fort Sill.

CORPS COMMANDER, by Sir Brian Horrocks, Charles Scribner's Sons, New York, 1977, 256 pages, \$14.95.

World War II campaigning in Europe is seen strictly from the British point of view in this work which was authored with the assistance of British military historian Eversley Belfield and MG Hubert Essame.

Military history buffs will find advantages in reading Horrocks' work if only because of the insight to be gained from other viewpoints of commanders like Montgomery and Eisenhower.

Much of the outlook and attitude of the British soldier at the fighting level, during this war, is apparent in this book as many examples of individual actions are provided. The key British-led action, Operation Market-Garden, in which both British and American airborne troops were involved, is not covered in the detail that might be expected from the man who was responsible for the entire ground advance part of the plan.

Horrocks sticks mainly to the tactical considerations of the European campaign in his book and gives many examples of mistakes made by both the allies and the Germans. For example, many German guns were sited on the Normandy beaches to fire upon allied troops landing at high tide. They could not fire out to sea and when the allied landings took place at half-tide, the leading waves of troops were out of range of German guns.

Throughout the campaigns, Horrocks is very aware of artillery use and provides some good examples of artillery effectiveness as in the combined British-American attacks on the Geilenkirchen Salient in November 1944 and in the Rhine crossing. A comparison of British and German artillery is provided, including ammunition types, rates of fire, and range. According to the author, the German's most effective weapons were multiple-barreled mortars firing rocket-type, high-explosive projectiles.

Horrocks is highly complimentary of the American GI while being critical (apparently justly) of the administrative and staff support given the frontline American soldier.

The observations and memoirs of this British Corps Commander are worth the consideration of anyone interested in a look at our most-analyzed and documented war from the eyes of our closest ally.—Asst Ed.