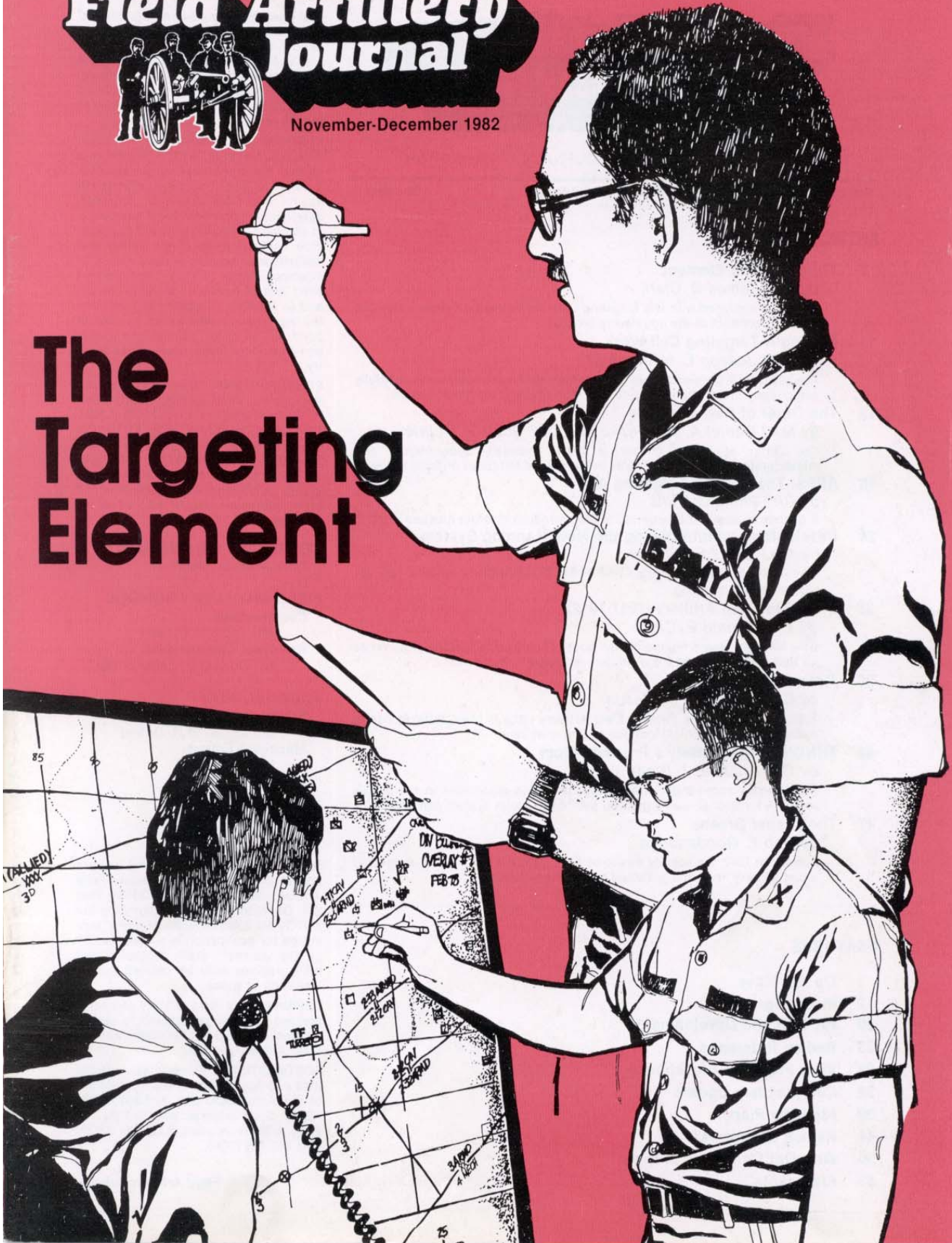


Field Artillery Journal



November-December 1982

The Targeting Element





Volume 50

November-December 1982

Number 6

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On the Move

MG JOHN S. CROSBY



Throughout our history, the men and women of the Field Artillery have provided the firepower to support the maneuver arms and help assure victory in battle. I am proud to be counted among the ranks of the Redlegs, and, as your new Commandant, I pledge to you my total dedication in meeting the needs of our Army.

I have one overall objective: to insure that the field artillery can shoot, move, and communicate so that it fulfills its role as a member of the Combined Arms Team. Maintaining that capability, however, is no easy task. It takes materiel in the form of weapons and munitions, and a host of support systems—all of which must capitalize on technology. It takes doctrine—doctrine which can turn a

smaller force into the victor. It also takes training—which teaches leaders and soldiers how to fight and win. Finally, it takes soldiers—the heart of our system.

Of these four areas, I consider the training of field artillerymen to be my most important job as Commandant and Commander of Fort Sill. (More about this later.)

Materiel

In the area of materiel, my predecessors have made monumental advances in the last decade. They have seen to the fielding of new systems and have laid the groundwork for the future. For systems already developed and/or fielded, we will fix what needs to be fixed and concentrate on making these systems more reliable, more maintainable, and more potent. This means pushing the howitzer product improvement programs and the fielding of the Battery Computer System (BCS), the Position and Azimuth Determining System (PADS), and the multitude of low visibility programs as well as the Pershing II and the Multiple Launch Rocket System (MLRS). For systems still being developed, we are going to work hard to improve our target acquisition capability by fielding a remotely piloted vehicle (RPV) as soon as possible. At the same time, we will continue to seek increased lethality and accuracy through "fire and forget" munitions.

Doctrine

In the area of doctrine, much progress has been made in implementing the AirLand Battle into our literature, but we still have a lot of work to do. Determining targeting organizations and


procedures, developing joint attack concepts, and reexamining doctrine for light forces are examples demanding a more detailed and/or fresh look.

Training

Training ties doctrine and materiel together and makes it work. I promise that Fort Sill will produce the best trained soldier possible. We are going to make certain that our institutional training at the School and the Training Center meets the standards we set, that we produce the type of exportable packages that meet your needs, and that we do everything possible to assist commanders in the field.

Personnel

The individual soldier is, without a doubt, the most important part of the Field Artillery system. Over the years, the competence and bravery of our Redlegs have made us great, and the men and women of today's field artillery are of the same fiber. They have what it takes to man the modern machines of war, and they have the bravery to stick with the guns. Through my role as the proponent for all field artillerymen—officers, warrant officers, and enlisted—I will stand behind each of you and will be unceasing in my efforts to promote the esprit and well being of our ranks.

As I accept my new responsibilities, I am enthusiastic about the challenges of the future. I shall do my best to fulfill the responsibilities of my new job and seek your support. Together, we can continue the tradition which has made the Field Artillery truly "The King of Battle." 

Incoming

LETTERS TO THE EDITOR

Speak Out

The *Journal* welcomes and encourages letters from our readers. Of particular interest are opinions, ideas, and innovations pertinent to the betterment of the Field Artillery and the total force. Also welcomed are thoughts on how to improve the magazine.—Ed.

Sound ranging

Fire support is no more effective or reliable than the target acquisition resources serving it. Soviet doctrine calls for massive artillery fires in predominately offensive operations; therefore, success on the battlefield is, in part, dependent on our ability to neutralize their field artillery. Historically, counterfire, and indeed combat itself, was a question of gun-for-gun, battery-for-battery attrition in an artillery duel. We cannot afford to engage in a duel with Soviet forces that outgun us by at least four to one. Our goal must be to acquire and attack their indirect fire means before they have an opportunity to inflict serious damage to our forces.

Field artillery target acquisition is currently accomplished with visual observation (fire support teams and forward/air observers), radar, or sound ranging. Visual observation is only as accurate and reliable as the observer, the weather, and visibility on the battlefield. Accuracy of locations may be suspect without the assistance of a reliable ranging device such as the GVS-5 Laser Rangefinder. Radar, while extremely accurate and reliable, is an *active* locating system subject to electronic countermeasures (ECM). It is limited to short operational periods and frequent requirements for movement. Obviously the acquisition mode is nonproductive when the radar is being moved or when the transmitter is turned off. Sound ranging remains as the only effective *passive* counterfire acquisition system.

Unfortunately, utilization of sound ranging since the Korean War has been limited and misunderstood. The cause of this limited use of the most prolific target production system of WWII rests with several factors to include obsolete equipment, long wire lines, and survey requirements for each microphone and flash observation post. The cadre of sound "experts" has dwindled to a handful, mostly

found in the Civil Service.

Several programs are underway to update equipment as follows:

- The WWII vintage recorder GR-8 is being replaced with the solid state recorder TNS-10.

- The FADAC will soon be replaced with the OL-274, a Hewlett Packard 9825B desk top calculator which allows sound ranging computations to be accomplished faster while reducing the time required to train operators.

- Since the biggest problem in using sound has been the excessively long installation time, a Radio Data Link, AN/GRA-114, will replace the long wire lines currently required.

- The concurrent fielding of the Positioning and Azimuth Determining System (PADS) will reduce emplacement time to about one hour. March order can be completed with 100 percent equipment retrieved in 30 minutes.

- Additional mobility is a result of a control central with radio communications.

The addition of these items of equipment helps to solve the problem of antiquated hardware; however, the system is still a long way from today's technology. Three factors prevent sound ranging from being an effective system. These are unit level leadership, section training, and the education of commanders.

Sound ranging is a highly technical field requiring a background in seismology and electronics. The current sound ranging TOE calls for a lieutenant platoon leader and an E7 platoon sergeant, MOS 17C. The lieutenant usually has had minimal sound training. His sound "career" is short, and normal career progression guarantees that any expertise he absorbs is soon lost with subsequent assignments. There is a need for a sound ranging warrant officer field similar to the radar and meteorological warrant fields to provide the continuity, innovative development ideas, and training expertise that is presently lacking.

Sound rangers, in order to obtain a fair share of the training dollar, have to educate The Artillery Community on the capabilities the new equipment provides and then sell sound ranging as an extremely reliable source of battlefield intelligence. It is critical that each target acquisition battery (TAB) have access to a sound mini-base with readily available simulators. Periodic TAB exercises with

requirements to acquire live artillery, to include TAB external evaluations (ARTEP), are critical.

Technical advancements in target signature data, infrared optics, lasers, computers, and seismic recording at civilian institutions continue to take quantum leaps every year. Our lack of awareness of many developments (e.g., oil field exploration) has created an educational void in the development of new systems. The technology exists to develop a fully automated passive sound/flash artillery and mortar acquisition system and do it with a preponderance of "off-shelf" procurement. This has not happened because our developers do not have access to today's research and they are not technically qualified to evaluate the relative merits of proposed developments or to direct a systematic research program. In order to maintain technological parity in sound/flash development, an educational program at a civil educational institution specializing in general physics, acoustics, electronics, meteorology, mathematics, and computer science is needed. All disciplines could not be fully developed in a one-year program; however, several iterations of officers, civilians, and eventually sound warrant officers could provide a well-developed base within target acquisition.

The need for a passive, all-weather, artillery locating system to supplement visual observation and radar is obvious. Now is the time to start modernizing our sound/flash capability. Hardware must be designed that is compatible with Division '86 and beyond. Personnel requirements and training need updating as discussed and, finally, leaders must be shown that the artillery is composed of more than tubes. The effectiveness of artillery acquisition is in danger of being further degraded without these steps.

Gene Minietta
MAJ (USAR), FA
Lawton, OK

Proud to be a second lieutenant

I want to voice strong objections to ILT Walter M. Biersack's comments on the role of the FIST chief.

Specifically, I would like to know how the position of FIST chief has been "degraded" by utilizing newly commissioned second lieutenants. He states that using second lieutenants

results in inconsistent performances during ARTEPs and the development of a "temporary attitude" by FIST chiefs.

Wake up Lieutenant Biersack. No job in the Army is permanent. Does that mean that every job that is held by a second lieutenant is going to be degraded because it is temporary?

Personnel turbulence is a constant factor of Army life. This is where leadership and professionalism of the officer comes through. The true officer does not complain but completes his mission, given the time and resources.

Lieutenant Biersack also states that one should have individual experience and maturity, which eventually gives the officer respectability. I gather that since I do not have much field experience as a second lieutenant that I do not have respectability!

Do you remember when you were learning your job as a second lieutenant, or does it slip your memory?

I am proud to be a second lieutenant, to serve in the United States Army, and to be in the field artillery. I enjoy the responsibility and professionalism of being an officer. I grieve when an individual tries to downgrade his subordinates.

John R. Lockley
2LT, FA
Directorate of Training
Developments, USAFAS
Fort Sill, OK

The occupation card

A locally produced training aid, called the occupation card, has proved very useful to Battery B, 1st Battalion, 84th Field Artillery.

The 5- by 7-inch "card" is constructed of hard white plastic, approximately one-eighth inch thick, laminated with film on which the

M16 subtense table (January-February 1982 *Journal*) is imprinted on one side and the form shown below on the other. Thus, one can write on the form and erase or change information as necessary.

Typical use of the card is as follows: During reconnaissance, selection, and occupation of position (RSOP), the battery commander or his gunnery sergeant fills in the blanks on the right-hand side of the form on two cards, indicating the method of lay by circling the appropriate means. The word "initial" is circled, and initial lay deflections to each gun are recorded. Then, by using the subtense table on the back of the card, the piece to circle distance is recorded.

One card is given to the fire direction center (FDC) advance party guide (chartman) to enable him to set up his chart or program the TI-59 calculator.

Initial terrain gun position corrections (TGPCs) are computed as time allows.

The second card is left at the lay circle. The battery executive officer (XO) uses this card upon arrival, checks the computation on the circle, and uses the initial deflections to lay the battery. The XO then records the final lay deflection of each piece and erases the circle around the word "initial" and marks "final." The card is then given to the fire direction center personnel for final double checking and recomputation of terrain gun position corrections. The advance party chartman provides a blank card for the battery commander's use during any subsequent RSOPs.

Maxey D. Brantley
CPT, FA
B Btry, 1-84th FA
Fort Lewis, WA

B BTRY, 1-84th FA INITIAL/FINAL OCCUPATION CARD					PA _____
GUN NO.	INITIAL DF	FINAL DF	M16 SUBTENSE ANGLE	DISTANCE TO CIRCLE	BTRY GEN _____
1					BTRY ALT _____
2					METHOD OF LAY:
3					MAG/SURVEY/SIMO
4					AZ TO EOL _____
5					AZ OF FIRE _____
6					AC UMR* _____

*Aiming circle upper motion recording.

Occupation card.

THESE VALUES ARE ACCEPTABLE FOR USE WITH TGPC

MEASURE THE LENGTH OF AN M16 RIFLE FROM THE RIFLE BUTT TO THE END OF THE FLASH SUPPRESSOR

ENTER THE TABLE WITH THE MILS MEASURED AND EXTRACT THE DISTANCE (MEASURED IN METERS)

MILS	DISTANCE	MILS	DISTANCE	MILS	DISTANCE	MILS	DISTANCE
.5	1950	10.5	92.8571	20.5	47.561	30.5	31.9872
1	975	11	88.6364	21	46.4286	31	31.4516
1.5	650	11.5	84.7626	21.5	45.3488	31.5	30.9524
2	487.5	12	81.25	22	44.3182	32	30.4888
2.5	390	12.5	78	22.5	43.3333	32.5	30
3	325	13	75	23	42.3913	33	29.5455
3.5	278.571	13.5	72.2222	23.5	41.4894	33.5	29.1045
4	243.75	14	69.6429	24	40.625	34	28.6745
4.5	216.667	14.5	67.2414	24.5	39.7959	34.5	28.2609
5	195	15	65	25	39	35	27.8571
5.5	177.273	15.5	62.9032	25.5	38.2353	35.5	27.4648
6	162.5	16	60.9375	26	37.5	36	27.0833
6.5	150	16.5	59.0909	26.5	36.7925	36.5	26.7123
7	139.286	17	57.3529	27	36.1111	37	26.3514
7.5	130	17.5	55.7143	27.5	35.4545	37.5	26
8	121.875	18	54.1667	28	34.8214	38	25.6579
8.5	114.706	18.5	52.7027	28.5	34.2105	38.5	25.3247
9	108.333	19	51.3158	29	33.6207	39	25
9.5	102.632	19.5	50	29.5	33.0508	39.5	24.6835
10	97.5	20	48.75	30	32.5	40	24.375

Subtense table.

Selling fire support is passe'

The thrust of your 1982 May-June issue centers on concern over fire support. Here, several authors feel that maneuver commanders either do not understand or appreciate this valuable asset. Has this always been the case? Decidedly not!

Just look back to World War I where artillery was the dominant force on the battlefield. Every commander knew that, in the attack, artillery fires prepared the way and the rolling barrages put the infantry on their objectives; while in the defense, artillery counterpreparations softened the attack, as defensive barrages broke it up. Artillery fire accounted for most of the casualties. With the appearance of armor and tactical air on the battlefield, however, the intimate support role of the artillery lessened.

Artillery fire became routine and was taken for granted by many on more than one occasion in World War II. During the preparation for an attack, the division G3 was heard to say, "Here's a draft of our order for the attack — Artillery, will you please write in the artillery paragraph."

With such casual attitudes prevailing, no wonder these present writers stress the need for "selling" artillery support to the maneuver commanders.

With the advent of guidance systems, radar development, new type projectiles, and TACFIRE — to name just a few — *artillery power has come full circle*. Integrated with other available assets, it now dominates the battlefield, day and night, good weather or foul as never before. Furthermore, its effective area has been greatly extended in depth.

Once over the horizon, its first shot ability can destroy army battle formations, armored or not, approaching in the foreground. The cumulative effect of all these advances has not been appreciated by the Army as a whole. "Selling" the improved product to maneuver commanders is *passe'*; changes in doctrine, organization, and procedures are necessary.

•**Doctrine** — Field manuals must state and service schools must emphasize that a commander's most powerful asset today is his artillery.

•**Procedure** — Whenever a commander is given a mission or decides on a course of action, it should be mandatory that his artillery commander be immediately notified and, when the artillery plan is received, it should be given primary consideration *before the mission draft is*

completed. Collocation of the commander's operations staff section and that of the artillery are a *must* while orders are being prepared. Also, collocation of the maneuver commander and his artilleryman is necessary during critical phases of air operation.

•**Organization** — In the military hierarchy, rank is as important as mortar is to a mason; it is a measure of responsibility as well as ability.

I believe the corps artillery commander meeting the division commanders at corps staff conferences will need two stars to argue effectively questions of assigned areas, road priorities, etc. Also, why the division artillery commander was demoted to colonel is just incomprehensible. He carries a far heavier load than the two assistant division commanders. He must be up-graded again! The French Army in World War II so recognized their artillery commanders. In the Soviet Army today, the artillery is regarded as a "corps d'elite" commanded by a *field marshal*.

•**Action** — The Field Artillery Community faces the task of persuading our general staff to upgrade the artillery in rank and doctrine to its present potential. This will be a long and difficult task because military thinking responds slowly to fundamental changes.

Let's not forget that GEN Billy Mitchell's reward for proving airplanes could sink ships was a court-martial!

Roland P. Shugg
BG (Ret), USA
Oakland, CA

TI-59 in fire support coordination

My compliments to SSG David M. Johnson whose article, "The TI-59 as a Tool in Fire Support Coordination," appeared in the July-August 1982 *Field Artillery Journal*. The program is well constructed and leaves plenty of room for storage of both battery and target locations. I found one problem, however, that could develop, particularly when the program is used by an inexperienced operator.

The maximum ranges used for the test are entered by the program itself to an accuracy of one meter using either SBR EE, SBR (, or SBR). Generally, locations by map inspection are determined to an accuracy of 10 meters (8-place coordinates). The failure of the TI-59 operator to enter both battery and target locations using 10-place coordinates would

result in targets of up to 10 times the maximum ranges of the weapons being selected as within the range for the battery.

Either of two methods may be selected to circumvent possible errors such as this. The use of 10-place coordinates is a must, or the program steps must be altered to allow the use of either 6- or 8-place coordinates.

Changing the program is quite simple. If the program has not yet been entered and/or saved, skip over steps 177, 187, and 197 to allow use of 8-place coordinates. Further, skipping steps 176, 186, and 196 will allow use of 6-place coordinates. (Note: Each step omitted will reduce the location of subsequent steps by one place in the program.)

If the program is already loaded (either manually or from the magnetic strip), following this sequence will adjust the program as shown.

Reduction to 8-place coordinates:
GTO 197 LRN 2ND DEL LRN
GTO 187 LRN 2ND DEL LRN
GTO 177 LRN 2ND DEL LRN
Reduction to 6-place coordinates (only after reduction to 8-place coordinates):
GTO 194 LRN 2ND DEL LRN
GTO 185 LRN 2ND DEL LRN
GTO 176 LRN 2ND DEL LRN
Thomas J. Smith
Maj, FA (NJARNG)
FSO, 1-112th FA
Cherry Hill, NJ

More on Soviet markings

Reference CPT Larry A. Altersitz's letter, "Soviet Markings," in the July-August issue of "our" magazine, and your reply:

I spent three and a half years as a liaison officer in a position where I had ample opportunity to observe subject forces both en route to and during tactical exercises. At least during that time, they always covered their turret numbers and most of the time replaced them with tactical markings and symbols. Even the wheeled vehicles would have their bumper numbers either reversed or removed and would sometimes also include tactical symbols and markings on the cab doors.

I believe that, in a hostile environment, we will not find any markings on "battle vehicles" (as the Soviets refer to them). The best indicator will be the antennas found on command tanks and AFVs.

I read with great interest all issues of "our" fine *Journal*.

Nicholas Troyan
MAJ, FA
San Francisco, CA

"Logistics Raid"

The article, "Logistics Raid," by MAJ Randall Rigby in the March-April 1982 *FA Journal* was SUPER! That is the type of information and alternatives that the Field Artillery should search out to help solve our logistics and tactical problems. Probably the key to Major Rigby's thesis is (as it should be) in his conclusion, in that "... those units that survive ... will be those who use a number of different techniques" We, as the Field Artillery Community, have often associated ourselves with checklists and step-by-step procedures. They are good in their time and their place for particular purposes, but for tactical and logistical purposes we need *options*. We need to be able to pick and choose among various alternatives to obtain the best advantage possible for our forces. We need more of this. Thanks for a great issue!

John D. Spengler
MAJ, FA
US Army ROTC Instructor Group
Indiana State University
Terre Haute, IN

Firing Battery Commander

I am currently working in the Combat Development Department, ROK Army Field Artillery School. I agree with the article "The Firing Battery Commander," in the November-December 1981 *Journal*, but I have the following questions.

- Can this concept be applied to US field artillery?
- If applied, what changes must be made in battery structure, personnel, equipment and doctrine?

Cho, Young heun
MAJ, ROK
Combat Development
Department
ROK Army Field Artillery
School
Republic of Korea

The concept is certainly viable and could be applied in the US Field Artillery but with some significant changes in personnel, training, and doctrine.

First, personnel changes would require that the present battalion fire support officer (FSO) and battery commander (BC) exchange jobs. The battalion fire support officer could then be free for reconnaissance, selection, and occupation of position (RSOP) and the battery commander could accomplish fire support coordination and planning. FIST chiefs could then be placed in the battery for RSOP, fire direction, and logistical resupply and subsequently progress

to battery reconnaissance officer (BRO) and fire direction officer. This, however, leaves no officers for observation. The FIST concept is good except the chief should be a senior lieutenant or captain. The progression for artillery officers would be:

<i>2LT</i>	<i>1LT</i>	<i>1LT</i>	<i>1LT/ Captain</i>	<i>Captain</i>
<i>Assistant XO</i>				
<i>Assistant BRO</i>	<i>BRO</i>	<i>FDO</i>	<i>XO/FIST Chief</i>	<i>Battery Commander/ Battalion Staff Officer</i>
<i>Assistant FSO</i>				

In summary, this would mean the addition of three observation officers (FIST chiefs) to each battery. Whether the FISTs are retained at battalion or battery level is a peacetime consideration only, as they would be deployed with maneuver companies when hostilities are declared.

This change also requires increased emphasis on RSOP, fire direction, logistics, and leadership in the Field Artillery Officers Basic Course (FAOBC) and observation, fire support planning, and coordination as well as command in the Field Artillery Officers Advanced Course (FAOAC). Hopefully, all officers would attend FAOAC prior to becoming battery commanders. Doctrinally, this is radical departure from the historical precedence that is the norm. As such, it would require significant research and analysis to determine its full effect and ramifications.

Equipment changes, if any, would be minor.—Ed.

On the Move

The "On the Move" piece in the July-August 1982 *FA Journal* contains an interesting sentence, "With 1981 also came the formal establishment of Fort Sill as the proponent for Field Artillery."

Could one infer from that statement that the Chief of Staff has recognized the importance of establishing a leader or spokesman and that it is tantamount to designating the Commandant as the Chief of Field Artillery?

During the period 1968-1972, when I was the Inspector General, I urged the Chief of Staff to designate the School Commandants as Chiefs of Branch. I was unsuccessful; however, maybe the time has come. If what I had hoped would come to

pass has really come to pass, I urge the Commandants to wear their branch insignia and not be just "plain" general officers.

I would prefer to have the Commandant, rather than Fort Sill, be the proponent. Thereby, the duties, responsibilities, and prerogatives can be defined clearly, and the individual can take charge. As Chief, the Commandant would have a marvelous opportunity to enhance the esprit, morale, and prestige of the Branch.

W. A. Enemark
MG (Ret), FA
Washington, DC

Your inference, Sir, that the Commandant of the Field Artillery School has been formally designated as the Chief of Field Artillery is correct. On 1 October 1981, specialty proponency for all Field Artillery officers (Specialty Code 13), warrant officers (MOS 201A, 211A, 214E, 214G) and enlisted personnel (Career Management Field 13) was transferred from Department of the Army to the Commandant, and is presently governed by AR 600-1 (Draft), Specialty Proponency. As the Chief of Field Artillery, MG John S. Crosby is charged with providing technical advice and assistance to US Army Military Personnel Center and recommending policy changes through US Army Training and Doctrine Command to the Deputy Chief of Staff for Personnel on personnel management policies, procedures, and programs as they pertain to and/or impact on the worldwide Field Artillery force. In this capacity, he has an excellent opportunity to enhance the morale, esprit, and prestige of the Branch, while keeping foremost the welfare and best interests of the Field Artillery.

As for the wear of branch insignia by general officers who are chief of their branch, the idea has merit and has been raised informally with the General Officer Management Office and the Department of the Army protocol office. Here, no decision has been made as of this writing.—Ed.

Correction

The piece of equipment shown on page 25 of the September-October 1982 *FA Journal* is a Variable Format Message Entry Device, rather than a Battery Computer System.

The Targeting Element

The Targeting Element should not be confused with the Targeting Cell (*Field Artillery Journal*, September-October 1981). The Targeting Element is concerned primarily with providing target input for the conduct of the counterfire program, whereas the Targeting Cell coordinates the interdiction of the enemy second tactical echelon. The intent of this article is to describe the nuts-and-bolts of how the SPEARHEAD Division Artillery accomplishes the functions summarized in the following quotation from FM 6-121 (Field Artillery Target Acquisition):

*Division Artillery Targeting—A Team Effort:
The Order of Battle (OB) Section receives a*



multitude of enemy-oriented data from various sources to include the field artillery intelligence officer using the division intelligence radio net. The section personnel record, plot, correlate, and analyze the data in order to make that "best guess" to locate enemy targets. Simultaneously, the target production section receives target information from the Target Acquisition Battery (TAB), field artillery aerial observers, and field artillery battalions to include additional information from crater analysis. Through careful plotting of all this information on the target production map, the section correlates the information to produce targets. While there are no specific functions performed independently by the Order of Battle and Target Production Sections, the activities of both are complementary, mutually supporting, and performed in concert. These efforts



Photo by SP4 James Williams

provide valid field artillery targets to the fire control element of the tactical operations center (TOC) to insure that timely, accurate, and decisive field artillery fires are delivered in support of the maneuver forces.

Background

In 1980, during the V Corps field training exercise (FTX) Certain Encounter, part of the '81 Autumn Forge exercises, an idea was formed to field a completely integrated targeting element in the 3d Armored Division Artillery tactical operations center. Thus, the operation during REFORGER represented nearly a year of planning, building, innovating, and testing.

Prior to the physical integration of the Target Production and Order of Battle Sections into a single Targeting Element, the div arty TOC was configured as shown in figure 1. The Target Production Section, staffed by the Target Acquisition Battery (TAB) Processing Section, performed its mission adequately; assets were controlled, combat information was collected, and targets were generated by the radars and sound/flash platoons. However, few targets were produced by correlating target indicators. Meanwhile, on the other side of the TOC, the Order of Battle Section was accomplishing all those doctrinal S2 missions such as breaking the electronic accounting machine and 7th Army Nuclear Release Authentication System traffic, maintaining TOC security, posting the outdated frontline traces provided by G2, and attempting to perform target prediction. There was, however, a lack of continuous and effective interaction between the sections and some duplication of efforts.

With these problems in mind, the TAB commander and S2 devised a rough plan for reorganizing the Targeting Element into one section which would operate in one vehicle. In January 1981, the section participated in a 3d Armored Division command post exercise (CPX) for five days and unearthed a multitude of problems; yet the new concept proved to be sound and demonstrated a significant improvement over the old organization.

After returning to home station, all parties concerned set out to apply the lessons learned and prepare the Targeting Element for its next, and hopefully final, test—V Corps FTX Certain Encounter. During the 10 months between the first field test and REFORGER, the section's van was remodeled for more efficient operations, a detailed section standing operating procedure (SOP) was written, extensive coordination was conducted with the S3 section and the division G2, and section personnel conducted mini-CPXs and held brainstorming sessions to determine the optimum methods of dealing with various contingencies.

Finally REFORGER arrived, and for two weeks the Targeting Element participated as an element of the ORANGE div arty. Problems notwithstanding, the section performed efficiently and validated the new organization.

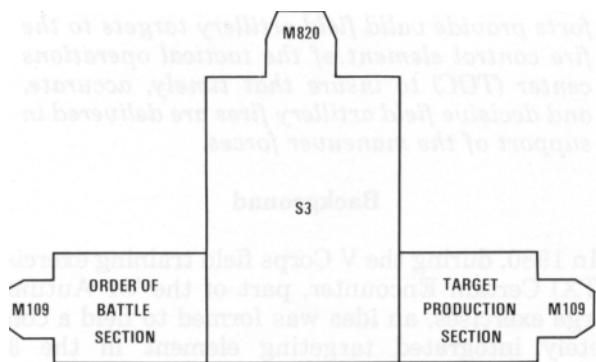


Figure 1. Configuration of the tactical operations center before the Targeting Element was established.

Mission

The mission statement, developed from the inherent responsibilities of the previously separate Order of Battle and Target Production Sections, was to:

- Direct the operations of TAB assets, insuring a timely flow of counterfire targets and targets of opportunity.
- Provide the fire control element with timely and accurate counterfire targets and targets of opportunity.
- Advise the div arty commander and S3 on the current enemy situation, anticipated enemy actions, and the status of friendly target acquisition assets.
- Report timely combat intelligence and counterfire information to higher, lower, and adjacent units as specified in the div arty and division Intelligence Collection Plans or in the OPORD/OPLAN in effect.
- On order, and with augmentation, assume duties as the 3d Armored Division G2 Section.

Organization

Determining the optimum personnel and physical organization of the Targeting Element was initially a challenge, since the Department of the Army tables of organization and equipment (TOE), the USAREUR modification tables of organization and equipment (MTOE), and artillery literature did not reflect what was actually on hand.

The personnel organization eventually accepted was structured around two 12-hour shifts (figure 2). The first shift was to work from midnight until noon, and the second would work from noon to midnight. Shift changeovers were staggered with those in the S3 section, and the workload was equitably split between the shifts (FTX/CPX activity almost invariably decreases from 2200 to 0400 hours).

The composition of each shift was balanced and included intelligence and target acquisition expertise. Although artillery doctrine calls for Military Intelligence (MI) personnel in the div arty TOC, this was not

authorized under the USAREUR MTOE. Consequently, it was necessary to divert an individual from the TAB and one from the HHB div arty survey platoon, on a six-month rotating basis, to function as an assistant S2 noncommissioned officer. The two radiotelephone operators (RTOs) on the first shift rotated duties as the TOC entry control guard while the S3 section handled the second shift.

Figure 3 portrays the physical organization of the Targeting Element. The M109 van, authorized by MTOE for the HHB survey information center, had been previously assigned to the S2. The design of the van's interior facilitated efficient operations and allowed considerable storage and work space.

First shift	
OIC	TAB XO (01-02)
NCOIC	S2 NCOIC (E7-E8)
Counterfire specialist	TAB Asst Opns SGT (E5-E6)
Counterfire specialist	TAB (E4-E6)
RTO	TAB (E2-E4)
RTO	S-2 Clerk (E1-E4)
Second shift	
OIC	S2 (01-03)
NCOIC	TAB Opns SGT (E6-E7)
OB specialist	Asst S2 NCO (E5-E7)
Counterfire specialist	TAB (E4-E6)
RTO	TAB (E1-E4)

Figure 2. Organizations of the two shifts.

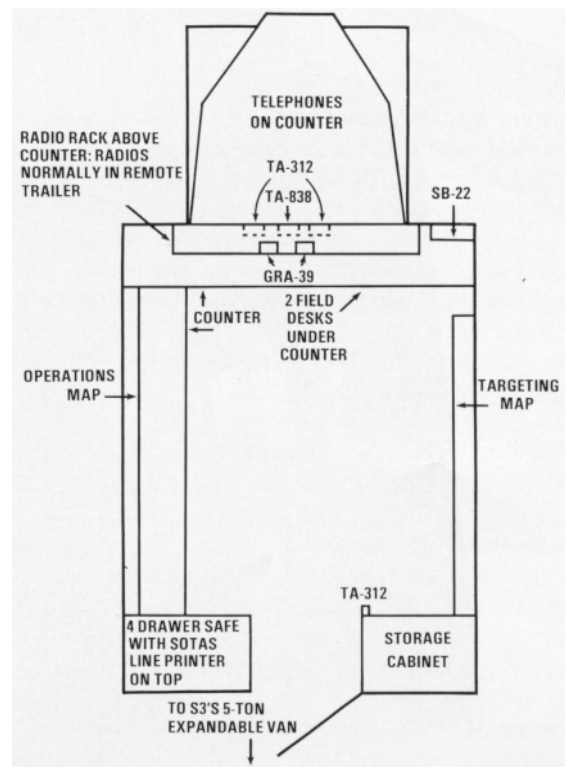


Figure 3. Physical organization of the Targeting Element.

Communications

A variety of communications means were available to the section, both physically in the vehicle and readily available from other sections (figure 4). The Standoff Target Acquisition System (SOTAS) lineprinter permitted hard-copy transmission of targets acquired by the SOTAS collection

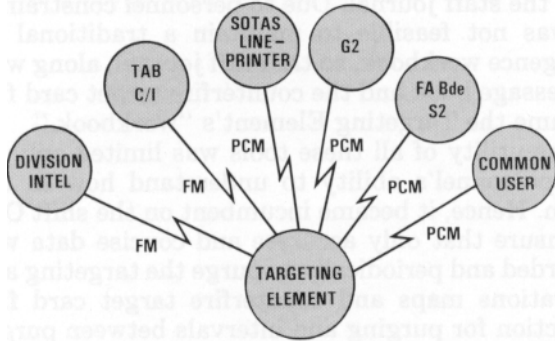


Figure 4. Communication means within the Targeting Element.

platform. Per the div arty commander's guidance on increased survivability, all FM radios had been removed from the TOC and placed in a remote trailer. The SB-22 switchboard (figure 3) was used for miscellaneous lines such as the TOC entry control guard, Targeting Element tent, etc. Also, it could patch any line through to the TA-312 in the rear of the van, often eliminating the need to crowd around the communications equipment in the forward end.

Functions

The successful accomplishment of the Targeting Element's mission required the performance of two interrelated functions: targeting and operations.

- The function of targeting included producing counterfire targets by merging all source data (figure 5), predicting counterfire targets by maintaining enemy indirect fire order of battle data, cueing target acquisition assets and intelligence agencies to locate counterfire targets, and passing the non-counterfire targets generated by the Targeting Element to the fire control element.

- Operations encompassed a wide range of tasks, to include providing the fire control element with any combat intelligence that aided in processing counterfire targets; requesting, analyzing, and disseminating weather data; recommending changes in coverage by TAB assets; passing pertinent combat intelligence to subordinate units; informing the Field Artillery Intelligence Officer (FAIO) at the main command post of the division artillery's general target intelligence requirements; requesting TDA equipment; and passing counterfire intelligence to the G2 Intelligence-Collection-Management (ICM) Section.

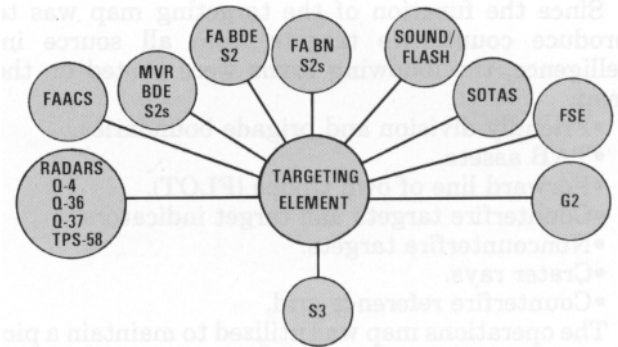


Figure 5. Sources of information.

Targeting Element tools

The five primary tools used by the Targeting Element were:

- Targeting and operations maps.
- An order of battle chart.
- A counterfire target card file.
- The staff journal (DA Form 1594).

None of the tools were unique to the SPEARHEAD Division Artillery, but certain modifications had been made to better mold these instruments to their specific needs.

Both the targeting and operations maps were a scale of 1:50,000 with major rivers, towns, and cities and also grid digits highlighted for ease of reading (a 1:100,000 scale would have been preferred for the operations map, but was not available). The maps were constructed with the targeting map covering the area from which targets were expected, while the operations map was positioned to permit a deep look into the enemy area of operations. Large, clear plastic trash bags or clear sheets of plastic were used in lieu of acetate for overlays since this method permitted easier storage of overlays when not in use. With the exception of the three symbols in figure 6, standard military symbols were used (the nonstandard symbols were developed to alleviate the clutter that resulted from using the normal graphics). If information beyond the location and caliber of weapon was needed at a later time, the counterfire target card could be located by use of the journal number. Counterfire targets, target indicators, and rays were color coded according to section SOP.

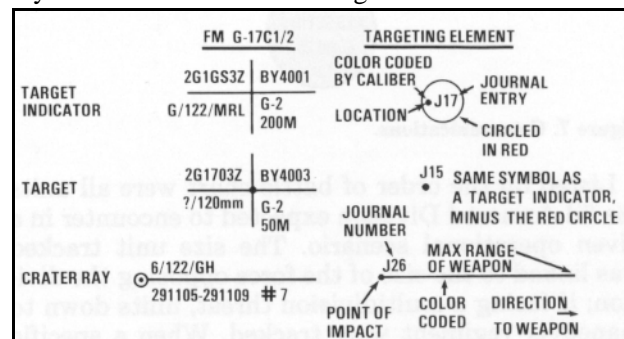


Figure 6. Sample operations map.

Since the function of the targeting map was to produce counterfire targets from all source intelligence, the following items were posted on the map:

- Friendly division and brigade boundaries.
- TAB assets.
- Forward line of own troops (FLOT).
- Counterfire targets and target indicators.
- Noncounterfire targets.
- Crater rays.
- Counterfire reference grid.

The operations map was utilized to maintain a picture of the enemy situation, to determine the placement of TAB assets, and to plot NBC-related information. The following information was plotted on the various overlays used with this map:

- Friendly division and brigade boundaries and other graphic coordination measures.
- Tab assets.
- Locations of the div arty elements, supporting artillery brigade/group, and artillery battalion TOCs.
- Division tactical and main command posts.
- Maneuver brigade TOCs.
- FLOT.
- General locations of enemy regiments and divisions and their directions of movement.
- Suspected and confirmed enemy artillery battery and battalion locations.
- Other enemy locations as determined by the shift OIC.
- Planned/actual enemy/friendly nuclear and chemical strikes and their respective downwind hazards.

Dependent on the type operations conducted by the division, other enemy information plotted on the operations map included avenues of approach and/or mobility corridors, probable objectives, suspected divisional and regimental boundaries, assembly areas, battle and attack positions, and defensive belts.

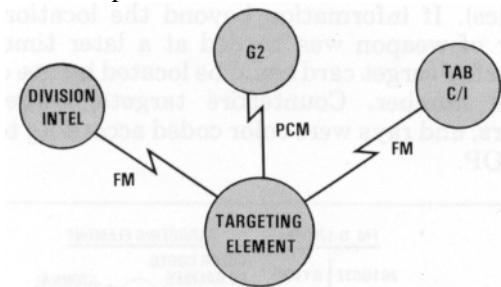


Figure 7. Communications.

Listed on the order of battle chart were all units the 3d Armored Division expected to encounter in a given operational scenario. The size unit tracked was linked to the size of the force opposing the division; if facing a multidivision threat, units down to maneuver regiment were tracked. When a specific unit was identified, either positively or tentatively, an annotation was made on the chart.

A counterfire target card file was also maintained with cards filed in three groups: active targets, target indicators, and historical targets. Historical targets were those targets that had been purged from the system and were maintained for post-exercise reporting. Cards within each group were filed by target category and numerically, by journal number, within each category.


The final tool utilized by the targeting element was the staff journal. Due to personnel constraints, it was not feasible to maintain a traditional intelligence workbook, so the staff journal, along with a message book and the counterfire target card file, became the Targeting Element's "workbook."

The utility of all these tools was limited only by the personnel's ability to understand how to use them. Hence, it became incumbent on the shift OIC to insure that only accurate and concise data was recorded and periodically to purge the targeting and operations maps and counterfire target card file. Selection for purging and intervals between purges depended on the situation—the determining factor was usually the availability of information.

Jump operations

When it became necessary for the div arty TOC to displace, a jump element displaced first, occupied a new position, established communications, and then assumed control of operations. The Targeting Element jump party consisted of the old Target Production Section's M109 van, manned by the off-duty shift. Prior to displacing, the off-shift OIC and NCOIC were briefed by their on-duty counterparts, received an overlay showing the current situation, and took a copy of the latest enemy situation report. Once in the new position, the jump element established communications (figure 7), received any necessary updates from the main CP, and then assumed control of operations.

Conclusions

The ideas discussed in this article represent how the SPEARHEAD Division Artillery Targeting Element applied its available assets to accomplish the mission. In many areas, we deviated from the doctrine in FMs 6-20, 6-20-2, and 6-121 because we had to make do with the personnel available. Hopefully non-TACFIRE equipped division artilleries, both in the Active and Reserve Components, will find some use for the ideas outlined in this article and will share their ideas on how they have translated doctrine into practice in their own Targeting Elements. 

CPT James R. Clark is attending the Airborne Rangers School at Fort Benning, GA.

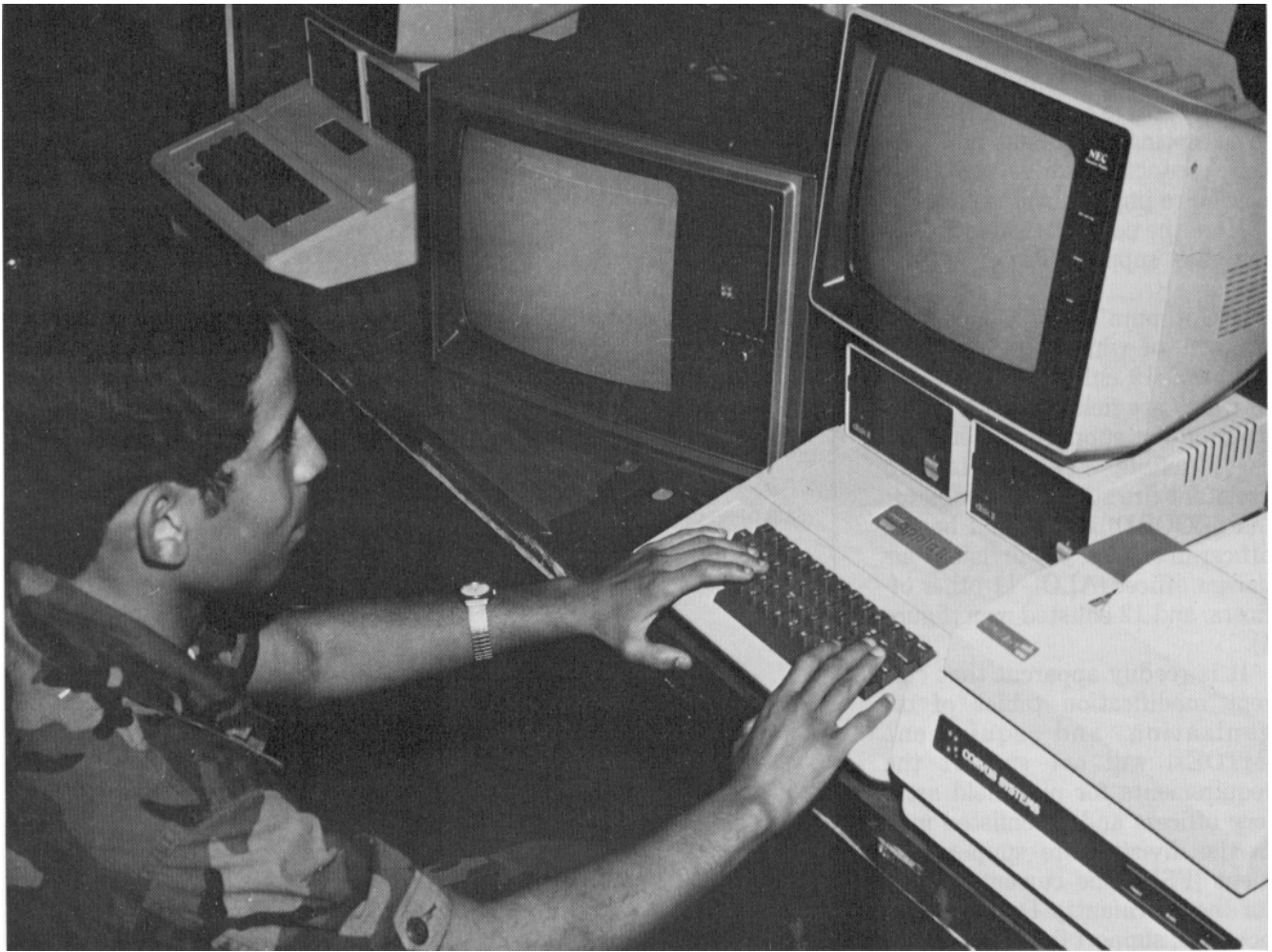


Photo by SP4 James Williams

Making a Targeting Cell Work

by MAJ Joseph E. Halloran III

As explosions ripped through the command post of the opposing forces, what had been a corps operations center a few minutes earlier now virtually ceased to exist. The corps headquarters, corps artillery headquarters, and air support operations center (ASOC) were destroyed and, at the same time, two divisional headquarters were attacked by long-range artillery fires and tactical air. This simultaneous attack

of deep targets, which obliterated the command and control of a corps beginning to launch its own attack, occurred after detailed analysis and planning had taken place, using the tools of the AirLand Battle.

This action, of course, did not actually happen, but the scenario was followed during Team Spirit '82, the largest field training exercise (FTX) to be conducted in the free world, involving more

than six divisions in Korea. The surprising aspects of this operation was that one division artillery, looking beyond its area of immediate influence, planned and coordinated the attack by employing corps assets along with its own. A decisive advantage was gained despite the fact that the strength of the targeting cell in the division fire support element (FSE) was much below that outlined in current Army guidelines.

Those particular guidelines have been a point of contention in Korea since 1982 when the Extended Battlefield Contact Team briefed the concept to United States Forces Korea (USFK). As stated by GEN Donn A. Starry (September-October 1981 *Journal*), "The extended battlefield is not a new concept. It is a more descriptive term for indicating the full potential we must realize from our acquisition, targeting,

and weapons systems." Although USFK planners have always agreed that the extended battlefield concept is a sound, workable doctrine, there has been difficulty in accepting the manning which the contact team stated was needed to implement the concept.

Here the contact team outlined two fire support element structures:

- "Optimum"—calling for 20 officers (9 of which are field artillery) and 19 enlisted soldiers (11 of which are field artillery) in the division fire support element.

- "Feasible"—calling for an assistant fire support coordinator (AFSCOORD) who would be the officer-in-charge, a division air liaison officer (ALO), 11 other officers, and 12 enlisted men (figure 1).

It is readily apparent that current modification tables of organization and equipment (MTOEs) will not support the requirements for nine field artillery officers and 11 enlisted men in the division fire support element (FSE); the current MTOE for the 2d Infantry Division will, however, support implementation of the targeting cell concept itself. This manning level, which allows the division FSE four field artillery officers and eight enlisted men, provides full manning of a targeting cell in the main command post. This actually forces a detailed integration of planning for the deep and close-in battles, since all FSE personnel must be familiar with both aspects of the overall battle to operate at this lower strength level. This austere manning was structured as shown in figure 2 for FSE operations during Team Spirit '82.

Organization

The organization of the 2d Infantry Division main CP and its proximity to other necessary staff agencies in each of the command post's 5-ton vans was instrumental in accomplishing the mission.

As shown in figure 3, the Field Artillery, Air Force, and electronic warfare planners are located in the same van, thereby bringing

	OPNS	MAIN TGT	PLANS	TAC
AFSCOORD (FA LTC)		float		
AFSCOORD (FA MAJ)	2			2
DIV FIRE SPT OFF (FA MAJ)			2	
FA INTEL OFF (FA MAJ)		1		
ASST FA INTEL OFF (FA CPT)				
OPNS NCO (E9 13Y50)	1			
INTEL NCO (E8 13W50)		1		
FIRE SPT NCO (E7 13F40)				1
FIRE SPT NCO (E6 13F30)	1	1		
FIRE SPT SP (E5 13F20)	1	1		1
FIRE SPT SP (E4 13F10)	1	1		1
CHEM OFF (CHEM MAJ)		1		
CHEM OFF (CHEM CPT)		1		
AIR LNO (USAF LTC)		float		
AIR OPNS OFF (USAF MAJ)	1			
AIR OPNS NCO (E7 USAF)	1			
	3 OFF 5 EM (2 FA OFF) (4 FA EM)	4 OFF 4 EM (2 FA OFF) (4 FA EM)	2 OFF (2 FA OFF)	2 OFF 3 EM (2 FA OFF) (3 FA EM)
Totals: 13 officers, including the assistant fire support coordinator (AFSCOORD) and air liaison officer (ALO) (who float) and 12 enlisted men. <i>Note: The above totals include nine field artillery officers and 11 enlisted men.</i>				

Figure 1. Type division FSE.

	MAIN FSE (OPNS & TGT)	TAC FSE
AFSCOORD (FA MAJ)	1	
AFSCOORD (FA CPT)		2
FA INTEL OFF (FA CPT)	1	
OPNS NCO (E8 13Y50)	1	
INTEL NCO (E8 13W50)	1	
FIRE SPT NCO (E6 13F30)		2
FIRE SPT SP (E3/E4 13F20)	2	2
	2 FA OFF 4 FA EM	2 FA OFF 4 FA EM
<i>Note: The senior AFSCOORD will move to the TAC FSE when it assumes control of the battle. At that time one of the junior AFSCOORD will take the senior AFSCOORD's place at the main FSE.</i>		

Figure 2. Manning for 2d Infantry Division FSE.

all long-range attack systems together. Placing the FSE between the intelligence analysts in the all source intelligence center (ASIC) and the operations element of the CP makes the FSE the logical focus for targeting information. This relatively small command post, never manned by more than 30 personnel, has little room for more than three field artillerymen per shift; yet, these three individuals manage to coordinate the

planning and execution of deep attacks while still coordinating the close-in battle with the FSE at the tactical command post.

The successful employment of a targeting cell without augmentation of current personnel authorizations follows the guidance that this concept must be used *now*. It also proves that the concept works on the ground with real troops and equipment in a realistic combat environment.

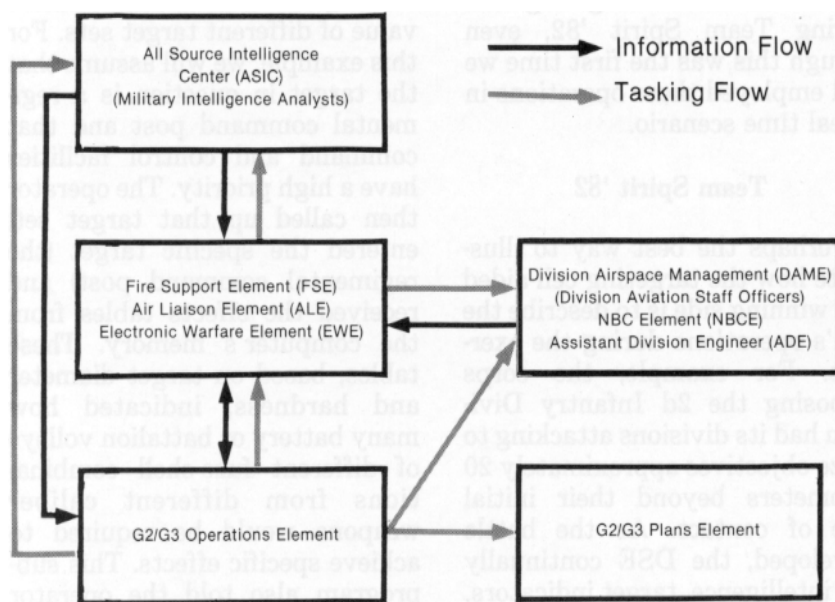


Figure 3. Organization of 2d Infantry Division command post.

Training

The basis for this success has been the training of FSE personnel in targeting cell operations. Like so many conceptual changes which have occurred in the past, however, any training guidance which would allow standard Army-wide employment of this doctrine has lagged behind the articulation of the concept. Since there is no fully operationally defined set of parameters for conducting a training program to produce a competent targeting cell, we have been left to our own designs. Our major training objective, therefore, was to devise a system by which *all* FSE personnel become experts in the operation of both the manual and microcomputer-based fire support data systems available to the FSE.

Once this major objective was formulated, the first step was to insure that each person in the FSE was a competent target analyst. This step entailed instruction in the procedures of intelligence preparation of the battlefield (IPB) which is a function not normally associated with an FSE; but, in order to operate as a competent targeting cell, FSE personnel had to know these

procedures so they would understand what information would be provided by the ASIC and how to use it to produce a better picture of the enemy arrays facing our forces. This knowledge allows the FSE to ask the ASIC for the precise information needed to conduct a successful deep attack. The initial block of instruction, therefore, focused on doctrine used by threat forces. Fire support element personnel learned the theory behind enemy employment of command and control assets, maneuver forces, and fire support assets. This block was followed by a study of the terrain upon which the fight might occur. When FSE personnel had this knowledge well in hand, they were briefed on how the threat would probably employ that doctrine on the Korean peninsula. Then the FSE personnel were shown the methods for developing a model by which we could estimate what the enemy might do in a given situation and in what sequence.

This instruction led us into the area of target value analysis (TVA), the methodology by which the FSE can determine which targets (high payoff targets) would produce the greatest success for the attacker and frustrate the enemy's operations the most. Here, the Field Artillery

Mission Area Analysis study conducted for a European environment was the logical starting point. A major obstacle, however, was the lack of any complete readily available target analysis for Korea. Using data from the European scenario and current United States, Republic of Korea (ROK), and North Korean Army doctrine, the FSE set out to accomplish the following tasks:

- Produce a TVA of the North Korean Army.

- Produce a TVA based on US and ROK doctrine since the forces faced by the 2d Infantry Division during the Team Spirit exercise would be US and ROK.

- Complete this production and instruct FSE personnel in the use of the TVAs in six weeks.

A study of North Korean doctrine resulted in some modifications to the European-based TVA and a target value analysis was produced which appeared to follow North Korean decision-making criteria in a logical manner. A review of the Army's "how-to-fight" manuals, ROK doctrine, war-gaming rules, and experience drawn from both maneuver and fire support commanders in the 2d Infantry Division led to the production of the TVA for Team Spirit '82.

The production of "homegrown" TVAs, while intensively time-consuming and not as complete as the US Army model, aided in the instruction on how to use the target value analysis. (Personnel in the FSE had to become experts in certain areas of the TVAs since these same individuals produced the drafts for those sections.) The training which ensued required that, given an enemy situation by the ASIC, FSE personnel could accomplish the following tasks:

- Plot targets correctly and record their time of location and any movement of the targets.

- Determine which divisional, corps, and Air Force assets could range the targets.

- Determine, by using the TVA, which enemy elements constituted high payoff targets for any given enemy situation.

- Establish a logical sequence

for attacking several targets with the limited resources available based on target importance criteria in the TVA.

- Establish the required information to be developed by the ASIC in order to attack these targets effectively. (This set of information requirements would usually entail asking DSE to look for precise visual and electronic signatures of specific types of enemy elements once a general target indicator had been located.)

- Determine the most efficient and effective means to attack any single or group of targets.

- Produce interdiction and other attack programs through which the various assets at our disposal would engage these targets.

FSE personnel were required to accomplish these seven tasks both manually and with the microcomputer which served as the primary means of data reduction. Use of the microcomputer also presented two major challenges to the FSE:

- First, the FSE had to develop its own computer programs to meet its operational requirements since there were none available. (The programs in use in CONUS and Europe were based on more extensive computer systems than the one available in the 2d Infantry Division.)

- Second, once the programs were developed, FSE personnel had to learn basic computer programming and operating techniques as well as other techniques required to accomplish the seven required tasks. The training program used to train the computer operators was similar to that used to produce competent FADAC operators since it included more of the *how* of computer operations than the *why*. After receiving an initial orientation on the operations of the microcomputer, FSE personnel underwent instruction in the processing of the seven major tasks required in our operations. Those personnel who did the best work during this instruction were then given instruction in basic programming techniques.


All of this organization and training led to the successful operation of the targeting cell during

Team Spirit '82, even though this was the first time we had employed these operations in a real time scenario.

Team Spirit '82

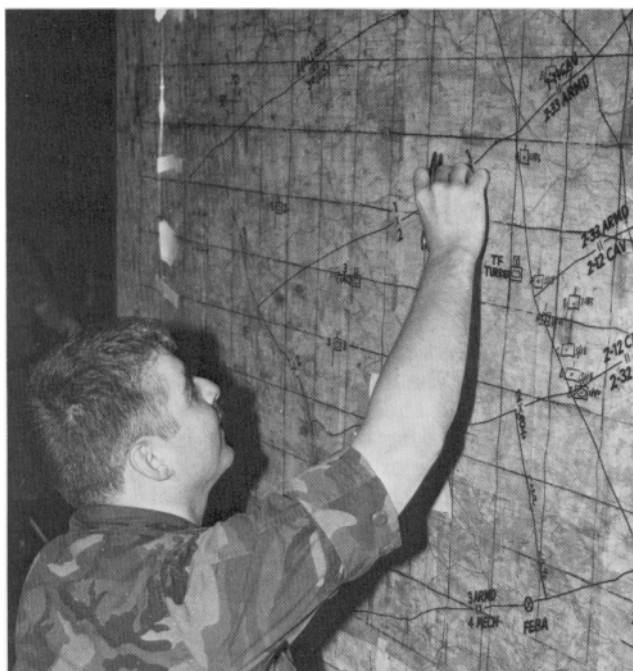
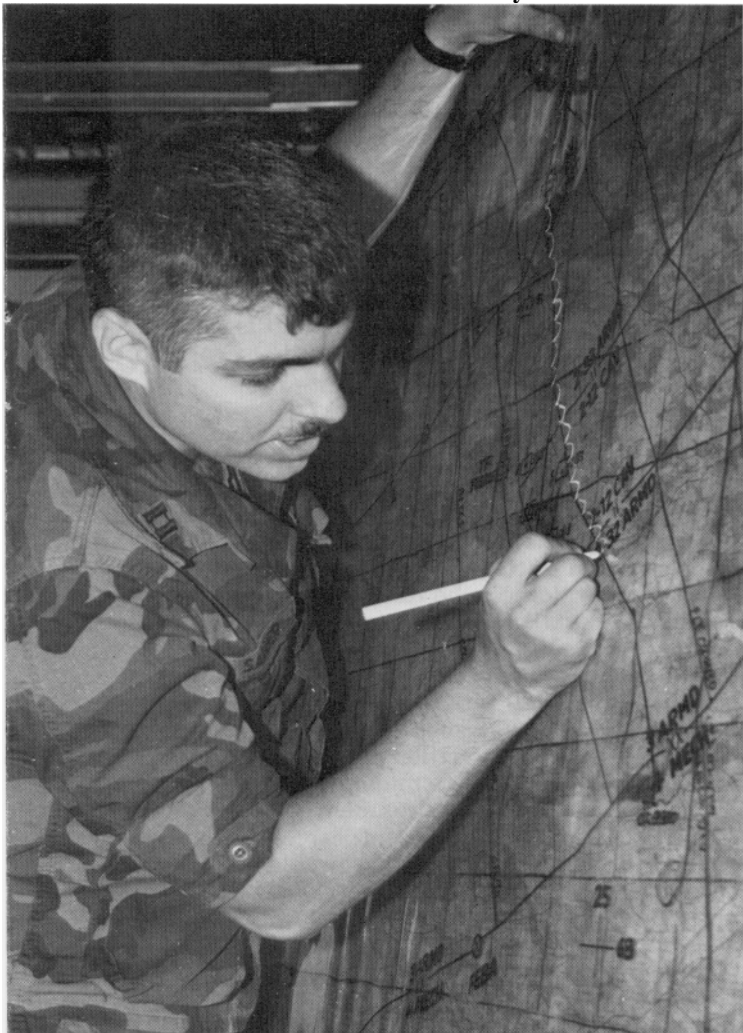
Perhaps the best way to illustrate how the targeting cell aided the winning side is to describe the cell's operations during the exercise. For example, the corps opposing the 2d Infantry Division had its divisions attacking to seize objectives approximately 20 kilometers beyond their initial line of contact. As the battle developed, the DSE continually fed intelligence, target indicators, and hard targeting information to the FSE. Locations were then plotted on the FSE map by a manual operator and entered into the computer by the computer operator, and a map sheet was produced on the computer monitor which located the target. (This example will now follow the computer operator's procedures since the manual operator accomplished the same tasks in a slower and somewhat less accurate manner by using mapboards, munitions effects tables, and a printed copy of the locally-produced TVA.) The computer operator next entered the target description and location on a target list subprogram which also told the operator what other targets had already been located in the same general area and what enemy operations might be developing in that area. This same information was also portrayed on the map initially displayed on the monitor. The computer operator then entered a ranging subprogram which indicated the artillery units that could range the target based on different types of projectiles and propellants and also indicated the flying times of aircraft to the target from specified orbit points and airfields. When the operator had accomplished these tasks, performed immediately upon receipt of all targetable information, he called up the TVA from the computer's memory. After entering the enemy situation (in this case an enemy division in the attack), he was shown the relative value of different target

sets. For this example, we will assume that the target in question is a regimental command post and that command and control facilities have a high priority. The operator then called up that target set, entered the specific target (the regimental command post) and received the effects tables from the computer's memory. These tables, based on target diameter and hardness, indicated how many battery or battalion volleys of different fuze-shell combinations from different caliber weapons would be required to achieve specific effects. This subprogram also told the operator what effect could be expected on the target by the standard bomb/weapon loads of US and ROK Air Force aircraft. This procedure gave the operator all of the information needed to recommend immediate fires from the division artillery, schedule the fires for an interdiction or other program to be fired later, or request close air support (CAS) or battlefield air interdiction (BAI) missions from the Air Force. Using the good targeting information received from the ASIC and the computer, the FSE could determine attack measures which were both efficient and effective. This quick and accurate targeting procedure allowed the targeting cell to process the data quickly and determine the appropriate attack means. The high level command and control elements of the opposing corps were neutralized before the corps' attack got off the ground.

The operations in the 2d Infantry Division indicate that a targeting cell can operate successfully without any major changes to current manning and equipment levels. A microcomputer (in this case, a small system employing one console and two floppy disk drives) produces more timely and accurate results than a manual system. 

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Field Artillery Journal



The Order Of Battle Officer

by MAJ Daniel A. Jurchenko and CPT Scott R. Gourley

One of the most important, often misunderstood, and perhaps underutilized individual in the div arty or FA brigade tactical operations center (TOC) is the Order of Battle (OB) officer (Military Intelligence (MI) officer on the (TOE), who provides direct contact between the field artillery and military intelligence branches within the TOC. A brief examination of the Order of Battle officer and the OB Section as they are designed to operate is therefore necessary to better understand their value to the entire division artillery (div arty) effort.

The Order of Battle Section, one of two sections (the other being the Target Production Section) within the Targeting Element at the div arty TOC, usually consists of one OB officer (a Military Intelligence Officer—often referred to as the div arty S2), an intelligence noncommissioned officer, and two intelligence analysts. This OB Section is designed for 24-hour operation with each 12-hour shift consisting of either the OB officer or NCO and one analyst. The OB Section at the field artillery brigade has an OB officer and an intelligence analyst (figure 1), each performing a 12-hour shift when necessary. The OB officer works in conjunction with the counterfire officer to produce targets and to develop the intelligence necessary for the div arty commander to make best use of his artillery resources. This general concept can be expanded into several stated responsibilities for the OB Section:

- Develop enemy order of battle.
- Predict target locations.
- Pass predicted locations to the Target Production Section.
- Prepare and disseminate target intelligence reports.
- Pass intelligence to appropriate agencies.
- Monitor enemy artillery tactics and techniques.
- Maintaining the order of battle.

AIM DIVISION ARTILLERY			
TOE 06-302H600			
Rank	MOS	Number	Title
O3	35A	1	Intel officer
E8	13W50	1	Intel SGT
E5	96B20	2	Intel analyst
FIELD ARTILLERY BRIGADE			
TOE 06-401H200			
Rank	MOS	Number	Title
O3	35A	1	Intel officer
E8	13W50	1	Intel SGT
E4	96B10	1	Intel analyst
AIRMOBILE DIVISION ARTILLERY			
TOE 06-701H100			
Rank	MOS	Number	Title
O3	35A	1	Intel officer
E8	13W50	1	Intel SGT
E6	96B30	1	Senior intel analyst
E5	96B20	2	Intel analyst
AIRBORNE DIVISION ARTILLERY			
TOE 06-201H300			
Rank	MOS	Number	Title
O3	35A	1	Intel officer
E8	13W5P	1	Intel SGT
E6	96B3P	1	Senior intel analyst
E5	96B2P	2	Intel analyst

Figure 1. Type order of battle sections.

Order of Battle officers working in field artillery units should consider the field artillery perspective on order of battle. The division G2 has access to a tremendous volume of intelligence data through organic assets, maneuver units, and corps. The G2 staff is of sufficient size to process and evaluate the data that has been received. All of these sources enable the G2 to produce the intelligence required to support the division's operation, and this information should be made available to the field artillery.

Even though div arty is interested in the entire divisional zone of action, the OB Section at the div arty TOC does not have the capacity to parrot the G2's effort in regards to the threat. While a portion of the intelligence developed by the division G2 pertains to threat artillery, the assets that are uniquely capable of locating threat indirect fire systems work for the div arty commander. There is a constant sharing of this intelligence since the G2 requires input from the div arty to help identify organizations in the threat hierarchy, to deduce any enemy intentions telegraphed through threat artillery employment, and to verify other information using the Target Acquisition Battery (TAB) as a confirming sensor. It functions as a two-way street where the Field Artillery Intelligence Officer (FAIO) at the All Source Intelligence Center (ASIC) pumps targets located by the G2 into div arty while the OB officer at div arty keeps the G2 current on the artillery threat.

Perhaps most importantly, as mentioned earlier, the OB

officer provides the div arty commander with the intelligence necessary to make the best use of his limited artillery assets. This intelligence covers not only the location of threat artillery and probable courses of enemy action, but also information on threat air defense artillery (AD) equipment (necessary for planning of suppression of enemy air defense) and the status and effectiveness of the enemy's target acquisition assets (a threat to friendly artillery that must never be underestimated).

To develop a complete understanding of the mission and capabilities of the OB officer it is necessary to examine the situation as it currently exists in the field.

Telephone survey

In an effort to better understand the Order of Battle officer—including his strengths and weaknesses—we contacted OB officers and several division artilleries to solicit their comments.

The Order of Battle officer has both strengths and weaknesses which can be directly attributed to his training. The OB officer receives exceptional intelligence training, allowing him to combine a large reference knowledge with the information being provided to him by all intelligence assets available to the division in order to keep the div arty commander advised on the enemy artillery force. He is aware of the resources necessary to understand and interpret a changing battlefield environment.

The weaknesses of an OB officer can usually be traced to a lack of field artillery training (necessitated by time and budget constraints) prior to his arrival at div arty. Most units, however, can quickly remedy this situation. All officers interviewed said that even though the quantity of artillery instruction at Fort Huachuca was limited, the quality of that instruction was excellent.

In our discussions with the OB officers we posed a two part question. First, what can the field artillery expect from the military intelligence officer who arrives at div arty to fill the OB position? Also what expectations does the MI officer have of the field artillerymen that he will be working with? After several discussions a general consensus appeared to emerge.

To begin with, in almost all cases the OB officers were functioning as doctrinally envisioned. The one major exception was a div arty where the OB officer stated that he did not have a counterfire officer in his TOC and that his primary intelligence function was monitoring the location of friendly artillery batteries and telling them when to move. Presently, it is not certain whether this reflects a dramatic departure from doctrine or a lack of familiarity with the job description on the part of the OB officer.

While some of the officers that we talked to had previous experience with the field artillery, most of them stated that they had minimal prior contact. They attributed their acquisition of field artillery knowledge to either an excellent intelligence NCO or a patient div arty staff.

When a new officer arrives in the TOC he should be questioned about field artillery experience and then be given a brief orientation on TOC operations and the field artillery in general. An OB officer can perform his job more effectively if he knows some basic artillery tactics. One suggestion that was made repeatedly involved sending a new MI lieutenant out on a unit ARTEP prior to assigning him to a div arty.

The concept of an orientation period was further expanded by several OB officers who worked with a TACFIRE div arty. All of them were generous in their praise of TACFIRE as an intelligence tool (one of them boasted that with TACFIRE and the Firefinder radars he was the first man in the division to know the exact location of enemy units). All of them felt that OB officers should attend the 6-week TACFIRE course.

Also, some seemed to feel that someone at Fort Sill or Fort Huachuca should determine what training an OB officer receiving an FA assignment needs.

Another point mentioned where the field artillery could assist the OB officer was with the fire support team (FIST). The FIST is often one of the first units to have battlefield information useful to the intelligence effort. By sending that information through either the direct support (DS) battalion to the brigade or through the general support (GS) battalion to the div arty the FISTs can provide a valuable service. One OB officer went so far as to say that "This is very accurate information because usually the artillery folks know exactly where they are and that's not always true with the maneuver folks." The point of coordinating the intelligence effort with requests for close air support (CAS) was also raised. The OB officer stated that the pilots providing CAS are keeping a keen eye on the battlefield for things such as hidden ADA sites and in the process they can be exceptional sources of battlefield information even if their locations are vague. The field artillery should think of coordinating this type of intelligence information with the Air Force.

A final area where the field artillery can assist the Order of Battle Section involves training. Several of the OB officers stated that their div arty had become much more involved with its Target Acquisition Battery and had taken it out on several recent field problems. These officers felt that they had developed a real appreciation for these assets and their ability to produce targets and coordinate intelligence. One suggestion recurring throughout involved "intelligence play" ARTEPS, but there's not enough emphasis placed on the intelligence portion of an exercise. If war breaks out, the intelligence folks are going to have a lot more say in matters and it would benefit all to exercise in a realistic manner.

New equipment

The advent of automation is both a challenge and an opportunity for the OB officer. TACFIRE and Firefinder

are expensive and complex systems that must be understood in order to manage the data that these systems deal with.

Firefinder radars will locate all types of indirect firing weapons. The task of the div arty OB officer is to collate this target intelligence and to induce the threat order of battle therefrom. For this effort to be manageable, it must be shared with the DS battalion S2. The S2 can focus his attention on a portion of the division zone by using his attached countermortar radar, which is optimized to handle high angle firing weapons. The DS battalion S2 should track threat mortars and accompanying artillery since these weapons pose an immediate threat to the maneuver brigade; the div arty OB officer should track regimental artillery and divisional artillery group weapons which his sensors are optimized to acquire.

Targets that will affect the mission of the maneuver brigade acquired by divisional sensors must be passed to the DS battalion. This works in the opposite manner when the Q-36 radar at the DS battalion picks up a target of divisional interest. Under the manual targeting system, this target passing can be characterized as a push system where the acquirer must push the target to the unit he thinks needs it. With TACFIRE, the flow of targets is a pull system in that computer peripheral devices can be set up to receive all targets that are located (regardless of source) in a predetermined zone.

The OB officer must become familiar enough with these systems to understand how they are employed, what information is provided and to whom, how he can effect this data, and how he manages the provided information.

Summary

The assistance provided by field artillerymen allows the OB officer to produce an Order of Battle Section that is capable of rapidly developing the intelligence to the information coming into the div arty Target Production Section from the TAB assets (over the TAB C/I net), he OB section can help produce artillery targets that can be rapidly and effectively engaged through the fire control element. In addition, the information from the OB Section on threat artillery assets will help the field artillery increase its survivability on any future battlefield. Perhaps it is an understatement to conclude by saying that a better understanding of the duties and capabilities of the Order of Battle officer will lead directly to a more effective div arty TOC. ☒

MAJ Daniel A. Jurchenko is an instructor in the Counterfire Department, USAFAS. CPT Scott R. Gourley, now a civilian, was an instructor in the Counterfire Department when the article was written.

APPS: The Unsung Targeting Aid

by CPT Philip J. Millis

Recently, the tongue-twisting Analytical Photogrammetric Positioning System (APPS) has become the subject of renewed interest by intelligence and fire support targeting communities. Quite simply, APPS offers an immediate, albeit partial, approach to tackling the targeting officer's old nemesis . . . target location error (TLE).

To date, target acquisition developmental efforts have largely been designed to match corresponding strides in increasing weapon system ranges and accuracies within the division area of influence. Artillery forward observers, for example, will soon be equipped with the AN/GVS-5 laser rangefinder, which is capable of ± 10 -meter accuracies at ranges to 10,000 meters. The AN/TPS-58 ground surveillance radar is accurate to ± 50 meters at ranges up to 20,000 meters for vehicles, while division artillery Firefinder assets (AN/TPQ-36 and AN/TPQ-37) are capable of producing precise data against mortars at 15 kilometers, artillery at 30 kilometers, and rockets firing out to 50 kilometers. All this sounds great, but what about targets of the critical second echelon divisions?

At ranges greater than 70 kilometers beyond the forward line of own troops (FLOT), primary reliance is placed on the rapidly-expanding field of signal intelligence (SIGINT). Here

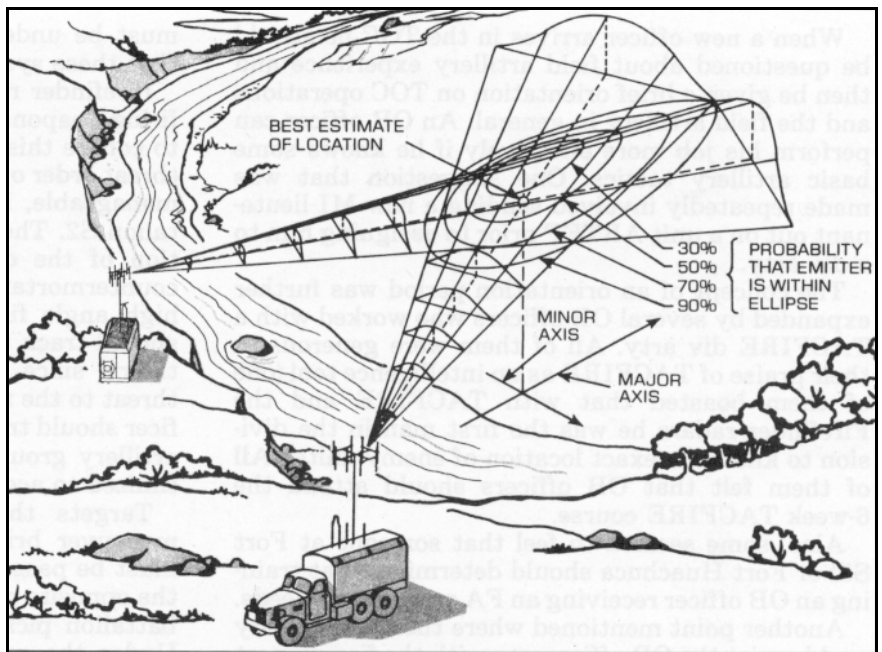


Figure 1. Model of elliptic error probability. (Only two RDF stations are shown in an effort to reduce diagram clutter, but usually three or more bearings are used to determine a target fix.)

SIGINT capitalizes on the fact that modern warfare requires extensive use of electromagnetic equipment for command and control as well as for tactical surveillance. Although by no means a panacea for all intelligence requirements, SIGINT nevertheless is an all-weather, day or night, any situation, source of valuable intelligence. From a "pure-intelligence" perspective (i.e., intelligence gathered for advising the commander of the enemy's disposition and capabilities), SIGINT and its two component disciplines—communication intelligence (COMINT) and electronic intelligence (ELINT)—offer a rapid, reasonably high-resolution, picture of the battlefield. From a targeting standpoint, however, we are less interested in target observation than in active engagement to delay, disrupt, and destroy units of the targeted echelon. Consequently, a target must be located with sufficient accuracy to offer assurance of achieving the desired effects from a reasonable expenditure of ammunition, whether by air or ground assets. The importance of this requirement becomes clear when we observe that the volume of ammunition

required to achieve a given effect varies exponentially with the target location error! Therein lies the inherent weakness of SIGINT as a target source.

Assume, for example, that one or more radio antennas of a type generally associated with a battalion or higher echelon command post (CP) have been located by their electronic signatures (figure 1). Having found the CPs operating frequency, the unit's location on the battlefield is determined via radio direction finding (RDF) intersection. Each RDF device has a TLE expressed as an elliptic error probable. When reported to the fire support element, this figure is translated into a circular error probable (CEP) of a given size plus a percentage figure. For example, when a 500-meter CEP is reported with a 90-percent probability, this means that there is a 90-percent chance that the target transmitter is located somewhere within the area defined by the 500-meter radius.

If you think the 500-meter CEP used in our example is not unacceptably high, consider the fact the RDF ellipses grow as radio range to the target increases.

Given the corps mission of interdicting the second echelon at ranges of 70 to 150 kilometers beyond the FLOT and given an appropriate standoff range for survivability of both airborne or ground-based SIGINT equipment, you have CEPs that will make even the most experienced target analyst blanch. It is at this point that capabilities offered by the APPS offer a measure of relief since the device affords the best means available for using terrain analysis to determine where the enemy would doctrinally be located, while at the same time eliminating those areas where the target could not be within the area of search. The target location CEP is therefore reduced.

The APPS consists of three major components: a terrain photo data base, a stereoscopic viewing device, and a desk-top computer for determining the easting, northing, and elevation of any given point located on the photo pairs. Part of the Army inventory for units at corps level and above since 1974, the APPS is not particularly new; however, until recently its role has largely been limited to the provision of survey information for areas where field surveys were impractical or tactically impossible. Indeed, APPS usage has been so focused to this rather narrow end that some artillery units have elected to drop the APPS from their equipment inventories altogether! What a dilemma, since no other device offers the accuracy or target refinement potential of the APPS.

System accuracy is essentially a function of the operator's ability to identify and measure photo image points combined with systemic errors associated with the photo platform and the APPS measuring method itself. While inaccuracies do exist, the errors are significantly smaller than those allowed for even the best topographic maps if only because drafting and reproduction errors are eliminated. Table 1, for example, compares national map accuracy standards for given map scales of Class A-1 (excellent, adequate) quality with the errors expected from an APPS using a

Table 1. National map accuracy standards (Class A-1.)				
Scale	Class A-1 Map Accuracy Standard		Expected APPS error (90%)	
	Horizontal	Vertical	Horizontal	Vertical
	1:25,000	13 meters	3 meters	3 meters
1:50,000	25 meters	8 meters	6 meters	5-6 meters
1:100,000	51 meters	15 meters	13 meters	6-7 meters
1:250,000	127 meters	30 meters	No data	No data

Table 2. National map accuracy standards (Class B-2.)				
Scale	Class B-2 Map accuracy standard		Expected APPS error (90%)	
	Horizontal	Vertical	Horizontal	Vertical
	1:25,000	25 meters	6 meters	3 meters
1:50,000	51 meters	15 meters	6 meters	5-6 meters
1:100,000	102 meters	30 meters	13 meters	6-7 meters
1:250,000	254 meters	60 meters	No data	No data


data base of the same scale. Numbers are expressed in meters at 90-percent probability.

While the differences shown above may be insignificant in the minds of some, consider that Class A-1 maps are subject to field survey validation and hence lie wholly within friendly territory. Maps of Warsaw Pact countries, where second echelon forces would most likely be targeted, fall into the B-2 (fair, usable) classification because of the obvious lack of field validation. To appreciate this difference, compare tables 1 and 2.

Table 2 shows the inherent limitations associated with terrain analysis using currently available maps of the Warsaw Pact territories. Even the most careful analysis may err by as much as 51 meters on a 1:50,000 scale. When one further considers that the average age of 1:50,000 scale maps for Warsaw Pact countries is 15 to 20 years, the availability of highly accurate and relatively recent data for terrain analysis becomes very significant indeed. Although SIGINT ellipse errors can be somewhat reduced by a careful terrain analysis with maps available to the All-Source Intelligence Center, true target refinement can only be performed by properly trained APPS personnel assigned to the target cell of the fire support element.

CPT Philip J. Millis, who is now a civilian, was the Chief of the V Corps Artillery Target Cell in Frankfurt, West Germany until June 1982.

Although target refinement procedures for the APPS have been developed and are currently in use in USAREUR's V Corps, it should be reemphasized that, while the APPS is immediately available, it is nevertheless only a partial solution. Partial, in that APPS photography may vary in age depending on Defense Mapping Agency schedules and priorities (Rapid Deployment Force projects, for example, undoubtedly have higher priority than APPS data base updates); partial, in that survey personnel assigned to the targeting effort rarely have APPS or terrain analysis experience; and partial in that the equipment is bulky, the photo base is voluminous, and the procedures time-consuming.

Despite these drawbacks and the acknowledgement that the APPS can only be considered in interim solution, the fact remains that APPS technology and procedures are available now. The final answer will, of course, be the development of target acquisition systems capable of locating second echelon targets with accuracies that approach zero meter CEP. But until research and development can provide such systems, fire support targeters can ill-afford to overlook the potential for innovative use of existing equipment such as the Analytical Photogrammetric Positioning System. 

FA Test and Development

DESIGN • DEVELOPMENT • TESTING • EVALUATION

FIST DMD tested

Force Development Test and Experimentation (FDTE) testing of the Fire Support Team Digital Message Device (FIST DMD) AN/PSG-5 was conducted at Fort Sill by the US Army Field Artillery Board (USAFABD) during July and August of this year. Preliminary findings based on emerging test results indicate the FIST DMD's mission performance to be favorable. A final test report will be published by the USAFABD later this year.

The FIST DMD is an enhanced version of the Forward Observer's Digital Message Device (FO DMD) AN/PSG-2A and provides the FIST chief with improved capabilities in four areas:

- Control and management of platoon observers.** Initial requests for fire are sent from the platoon observer to the FIST chief for determination of the desired fire support asset (air, naval gunfire, company/battalion mortars, or artillery) and establishment of the communications link necessary to complete the mission. The FIST chief also has the capability to preconfigure a communications link between an observer and a designated fire support asset, thus allowing for decentralization of missions. The FIST chief can monitor the progress of all missions and intervene in any or all if necessary.

- Fire support coordination for the maneuver company.** The FIST chief performs for the platoon observers those fire support coordination tasks that the FSO performs for the FIST. These tasks include selection of a fire support asset, consolidation of the target list, and execution of the maneuver commander's guidance.

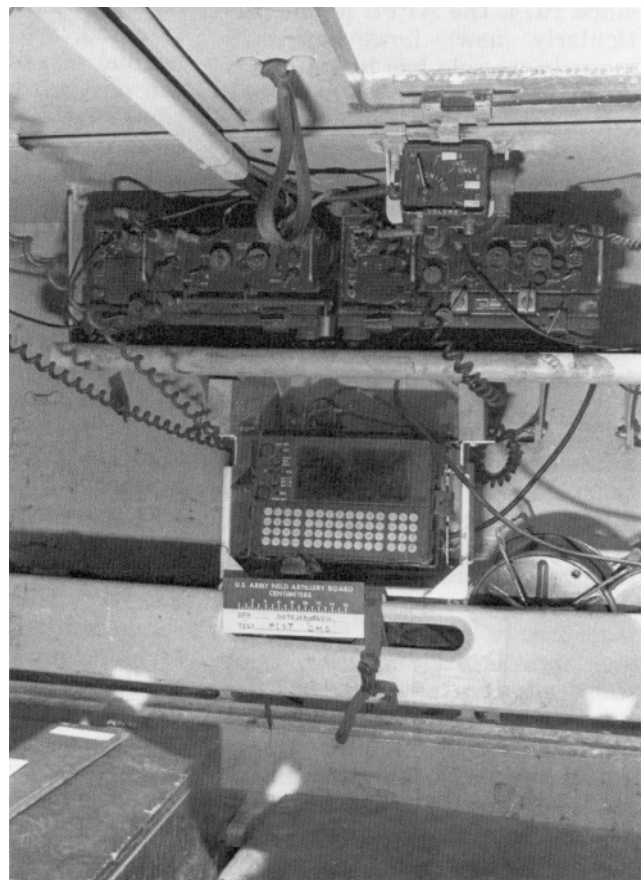
- Digital communications.** The FIST DMD gives the FIST the capability to operate in four radio or wire nets which facilitates communications to the artillery battalion TACFIRE, the Battery Computer System (BCS) at the firing battery, the Mortar Ballistic Calculator (MBC-23) at the 81-mm or 107-mm mortar section, and the FO DMD with the platoon or air observer. Communications are also possible with the DMD used by the separate lasing teams. Links can be established among subscribers on the same or different nets.

- Firing of Copperhead.** The FIST DMD provides decreased response time for the firing of Copperhead. Shorter transmission times required for digital communications, coupled with decreased mission response times of TACFIRE and BCS and an internal "countdown clock" which will display "command to lase" to the operator, and cue the ground/Vehicular Locator Laser Designator (G/VLLD), will provide an improvement in the number of expected battlefield kills.

The FIST DMD is approximately 11 inches long by 7½ inches high by 8 inches wide and is contained in two major assemblies: a front case made from plastic and a rear case made from aluminum. The weight of the FIST DMD is approximately 18 pounds (less the internal battery, canvas carrying case, and cables).

The front panel of the FIST DMD is identical to the FO DMD panel and contains the keyboard, plasma panel display, operator controls, switches, and indicator lamps. The 60-character keyboard and display provide the capability to enter, review, and edit fixed format or free text messages. Indicator lamps alert the operator to incoming messages, messages passing through, or receipt of outgoing message by the intended recipient.

The rear case assembly contains the battery compartment, connectors for four radio cables, external power, G/VLLD, and four wire lines. The four wire or radio communication connectors permit the FIST chief to operate in the required communication nets (company fire control, artillery fire direction, company mortars, and maneuver command). The FIST



Fire Support Team Digital Message Device.

DMD is powered from either rechargeable NICAD or throw-away lithium batteries or from an external 28-volt DC power source.

The FIST DMD can simultaneously operate in any of three modes: automatic, review, or fire request approval. The automatic mode allows the FIST chief to link a forward observer (FO) to a single fire support asset. Once the FIST chief does this, no further action is required by him. The FO sends his call for fire to the FIST headquarters, and the FIST DMD automatically routes the call to the selected asset on the proper net. Messages will flow with no action required by the FIST DMD operator as long as the link remains in the FIST DMD.

The review mode allows the FIST chief to review and edit each transmission from or to an FO. The FO sends his fire request message to the FIST headquarters where the FIST chief reviews the message, selects the desired fire support asset, and transmits the message to that asset. When the message to observer, shot, or splash is sent to the FO, the message again stops for the FIST chief to review and send on.

The fire request approval (FRA) mode is a hybrid of the automatic and review modes. When the FRA mode is selected by the FIST chief and an FO is placed in that mode, the FO's initial request for fire is sent to the FIST headquarters where the request stops and awaits the FIST chief's review and fire support selection. When he has made that decision and sent the message on, a temporary link is established between the originating FO and the selected fire support asset. Message traffic will flow on this link in both directions, with no FIST headquarters intervention required, until an END OF MISSION is sent. When an END OF MISSION is sent and acknowledged, the link is automatically broken.

These modes provide the FIST chief the option of selecting the amount of control/centralization he wishes to employ. The FIST DMD also has a relay capability which will relay a digital message from subscriber on one of the four nets to a subscriber on any of the other nets without operator action.

The FIST DMD was developed as a result of a HELBAT experiment and the Close Support Study Group (CSSG) Reports I and II. The CSSG I report brought about the change in field artillery doctrine which implemented the FIST concept. The FIST concept, however, was developed after TACFIRE had been designed.

A consequence of the late arrival of the FIST concept in regard to TACFIRE development was the lack of a device for the FIST chief to monitor and control his FO parties. This gap in the TACFIRE system was noted in the CSSG II report. The same report recommended that the four-channel digital message device used in the HELBAT experiment be explored for use by the FIST chief and the battalion fire support officer (FSO).

As a result of this recommendation, the FIST DMD was developed by the Project Manager for Field Artillery Tactical Data Systems in cooperation with the TRADOC System Manager for Field Artillery Tactical Data Systems and the Directorate of Combat Developments. Four prototypes were built by Magnavox and delivered to the Army in October 1981.

The FIST DMD Force Development Test and Experimentation compared two methods of employing the device: one where the FIST chief has the FIST DMD and one where both the FIST chief and the battalion FSO have the FIST DMD. This comparison provided information on the feasibility of using the device at both the FIST headquarters and battalion FSO locations. The test also provided information on the reliability and functional capabilities of the device and the training effort required to properly employ the device in a simulated combat environment.

The FIST DMD FDTE results will be combined with data that is derived from the Fire Support Team Vehicle (FIST V) Operational Test II (OT II) which will use the FIST DMD as a subsystem. A low rate production decision could be made on the FIST DMD in March of 1983.

(CPT(P) Thomas G. Heyse)

Italy joins in MLRS development

The LTV Corporation recently announced that the government of Italy has formally joined the United States, France, Germany, and the United Kingdom in joint development and production of the Multiple Launch Rocket System.

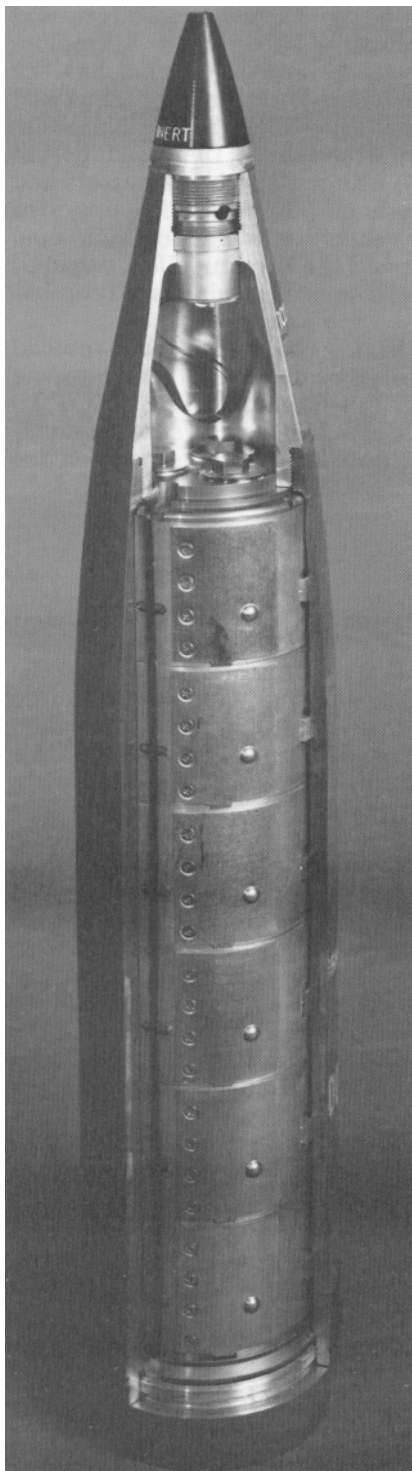
The cooperative agreement, entered into by the original four countries in 1979, seeks to establish MLRS as a standard weapon for potential deployment throughout NATO. The countries have agreed that such an understanding would allow each to achieve the operational capability required to counter the Warsaw Pact advantage in armed forces, while avoiding the costly duplication of separate development programs. Though other US weapons have been co-produced in Europe, MLRS is the first military system to be successfully co-developed as well.

The government-to-government agreement now becomes a supplement to the 1979 Memorandum of Understanding.

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EXJAM sails past engineering tests

Successful engineering tests at Yuma Proving Ground, AZ,



This cutaway view of the 155-mm artillery shell shows six jammers placed inside.

indicate that the artillery delivered expendable communicating (barrage) jammer (EXJAM) is gun rugged and safe to fire.

For the Yuma tests in May, jammers were loaded into 155-mm cargo rounds and fired from howitzers at various ranges.

"The concepts and hardware were proven successful," said Howard Phalan, the Signals Warfare Laboratory's (SWL) project leader for EXJAM.

While SWL manages the artillery barrage program, Harry Diamond Laboratories (HDL) has taken the lead in developing the delivery package.

Test procedures are as follows:

- Six jammers are loaded into each round. During flight, the base plate of the round is blown off, and the jammers are ejected from the round one at a time, according to preset timers.

- As the jammer or puck clears the projectile, four de-spin fins are deployed by centrifugal force and a three-foot streamer is released. The fins de-spin the jammer while the streamer provides a righting force to orient the puck.

- The puck, which is 3.5 inches high and 5 inches in diameter, impacts at a velocity of about 130 feet per second and is imbedded one to three inches in the ground at the proper angle.

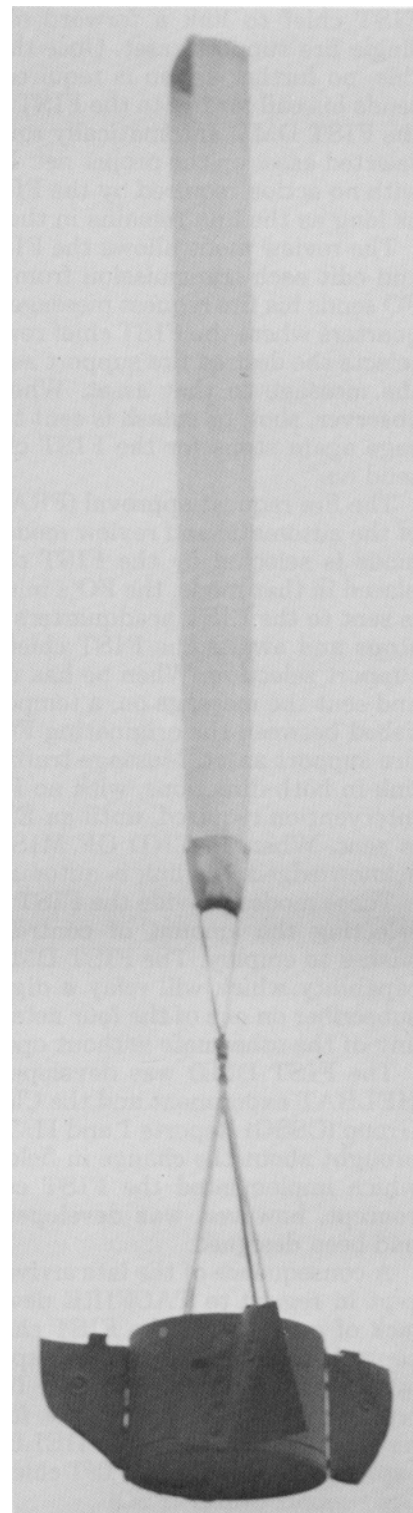
- The antenna/ground plane is then deployed and, within seconds, the transmitter is automatically turned on and the jamming begins.

According to Phalan, the EXJAM "will significantly influence the battle planning of the future. Nearly every type of communications may be disrupted by this system."

Joseph W. Miller, project engineer on EXJAM for HDL, pointed out that the jammers are less susceptible to detection than those now in the field and are much less expensive to produce. "Artillery crews can carry them with other types of rounds," he said.

The next series of tests at Yuma will involve testing 1,000

jammer units. Phalan said these formal developmental and operational tests would take place late in fiscal year 1983 or early in fiscal year 1984. (ERADCOM Currents)



Jammer dispersed from an artillery round in flight.

1982 Redleg Reference

The following is a list of *Journal* articles and "View From The Blockhouse" items for calendar year 1982 and the issue in which the material was published. The letters (VB) indicate "View From The Blockhouse" items.

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Hand-held calculator

Improvements in the Manual Solution of the 6400-mil Met/Gunnery Problem, Jan-Feb.

Nuclear target analysis and the hand-held calculator, Jul-Aug (VB).

The TI-59 as a tool in fire support coordination, Jul-Aug.
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The AHIP: Field Artillery Aerial Observer Platform of the Future, Jul-Aug.
The Doctrinal Option: The Potential Use of the Enhanced Radiation Warhead in Europe, Jul-Aug.
The Field Artillery Board, Sep-Oct.

Tactics/Strategy

Artillery Fire: Fast or Massed? Jan-Feb.
Backup for Survival, Sep-Oct.
Defensive Use of Tactical Nuclear Weapons, Jul-Aug.
Field Artillery and the Urban Battle, Jan-Feb.

FIST Training in Berlin: A MOUT Perspective, Jan-Feb.

German/United States Interoperability Training, May-Jun.
Hasty Displacement, Jan-Feb.
Integration of fire support, Nov-Dec.
Interoperability Training: Collocation of FDCs, May-Jun.
Logistics Raid, Mar-Apr.
Making a Targeting Cell Work, Nov-Dec.
Modern Mobility: New Equipment—New Tactics, May-Jun.
TACEVAL—Pershing's ARTEP, Sep-Oct.
The Artillery Position Directory: Moving Fast to Mass, Mar-Apr.
The Doctrinal Option: The Potential Use of the Enhanced Radiation Warhead in Europe, Jul-Aug.
The Four-Day War: TCADD's Response to Field Commanders, Jan-Feb.
The Gunnery Team in Southwest Asia, Jul-Aug.
The Operational Art of the AirLand Battle, Sep-Oct.
The Order of Battle Officer, Nov-Dec.
The Targeting Element, Nov-Dec.
What Do You Want Us To Shoot? Mar-Apr.

Target Acquisition

APPS: The Unsung Targeting Aid, Nov-Dec.
Counterfire operations under study, Jul-Aug (VB).
Hasty Displacement, Jan-Feb.
Making a Targeting Cell Work, Nov-Dec.
Meteorology, May-Jun (VB).
New Distance Measuring Equipment, Nov-Dec.
PADs added to some TOEs, Nov-Dec.
Redesignation of Counterfire Department, Sep-Oct (VB).
TAB conference, Jan-Feb (VB).
1982 TAB Conference, Jul-Aug (VB).
The Artillery Position Directory: Moving Fast to Mass, Mar-Apr.
The Order of Battle Officer, Nov-Dec.
The Targeting Element, Nov-Dec.

Training

Are you using the correct ARTEP? Nov-Dec.
Changes to the Individual Training Evaluation Program, Nov-Dec.
Exercise Kangaroo 1981, May-Jun (VB).
Field Artillery and the Urban Battle, Jan-Feb.
FIST Training in Berlin: A MOUT Perspective, Jan-Feb.
FM 6-10 rewrite postponed, Nov-Dec.
German/United States Interoperability Training, May-Jun.
Hasty Displacement, Jan-Feb.
Interoperability Training: Collocation of FDCs, May-Jun.
MQS II Program for Lieutenants ready for on-site evaluation, May-Jun (VB).
New radar maintenance training, Mar-Apr (VB).
PII training exercise, Jul-Aug (VB).
Reserve Training, Nov-Dec.
Salute! Mar-Apr.
SPAS—The Training Manager's Tool, Mar-Apr.
Standardization of M102 Howitzer Section Equipment and Crew Drill, Jan-Feb.
TACEVAL—Pershing's ARTEP, Sep-Oct.
The Artillery Position Directory: Moving Fast to Mass, Mar-Apr.
The DS Battalion TOC and TACFIRE, May-Jun.
The Four Day War: TCADD's Response to Field Commanders, Jan-Feb.
The Gunnery Team In Southwest Asia, Jul-Aug.



DEVELOPING AND INTRODUCING THE NEW MANNING SYSTEM

by MAJ L. Erick Ohlsson

In March 1981 the Chief of Staff, General E. C. Meyer, decided that combat effectiveness could be improved by adopting procedures to replace entire units, rather than individuals. Since the decision to adopt a new approach to manning many of the Army's units will change what many soldiers and their families experience during their careers, this article will explain why the decision to adopt a new system was made and what sorts of changes can be expected.—Ed.

For several years, leaders at all levels of the Army have reported that personnel turnover rates were increasing. With soldiers arriving and departing their units individually, some serving only 18 months or less, squads and crews rarely had the same people in them for more than a few months. This created a series of difficult problems. Noncommissioned officers were spending more time training new soldiers in basic tasks rather than developing and maintaining higher level skills.

Soldiers, on the other hand, were being forced frequently to readjust to new leaders with different standards, styles, and goals. Very few soldiers were able to work with the same people long enough to really know, trust, or have confidence in them. Combat effectiveness suffered in these units because their soldiers did not have enough trust or confidence in each other to work together effectively. They did not have time to develop the mutual respect for each other's abilities that must exist before soldiers willingly cooperate in building

and maintaining a unit's combat effectiveness.

Around the middle of 1980, several study groups were formed to determine what could be done to reduce personnel turbulence and improve unit cohesion. The first of these groups, the Army Cohesion Study (ARCOST), recommended a variety of changes, such as awarding ribbons to soldiers overseas, stabilizing company commanders and first sergeants, and reducing strengths in non-troop units so more soldiers would be available for assignment to troop units. Many of the ARCOST recommendations were approved immediately. Several of them involved such big changes that they required further study before a decision could be made. One of these was a recommendation that the US Army adopt a regimental system, under which soldiers would maintain a strong affiliation with the first unit to which they were assigned and return to that unit many times during their careers, whether it was at home or overseas.

Great Britain and several other countries have used regimental

systems for many years. However, history and national traditions influence the way the system would work in each country, so a Regimental System Study Group was formed to design a system that could work for our country and our Army.

Another idea that was approved for testing involved recruiting company-sized groups of soldiers, assigning them to the same units after their initial training, and keeping them together for their entire first enlistment. The test, called PROJECT COHORT, includes 20 companies (more about these PROJECT COHORT companies later).

By early 1981, the personnel turbulence problem had been studied by many different groups which had proposed many different solutions. To help clear up the issue, the Chief of Staff asked The Inspector General to review all of the studies and make recommendations on which proposals to adopt. This review was completed in March 1981 and, among other things, The Inspector General recommended that the Army use a combination unit/individual replacement system for the line companies of infantry, armor, and field artillery battalions. The Chief of Staff approved the recommendation and decided that this unit replacement system should be operated within the framework of an American Regimental System.

A small group, known as the Manning Task Force, was at work by early April with instructions to develop a manning system that would include an American regimental system and a timetable for introducing a new system to support only infantry, armor, and field artillery units until experience indicated that it could also be used to support other types of units.

There are four basic features to the concept for the new manning system: stabilization, unit movement, homebasing, and a regimental system. Each feature of the concept should assist in keeping soldiers and their leaders together



Photo by PFC Eric Albrecht

longer so they can work and train together to maintain combat effective units.

Today, combat arms soldiers are assigned to many different units after one-station unit training (OSUT), so no single unit benefits from the unit cohesion that develops during OSUT. Under the new system, company-sized groups of soldiers who have been recruited under a unit or station-of-choice option would enter the Army together and train together in the same OSUT company. At the end of OSUT, these soldiers would leave their drill sergeants and move to the same infantry, armor, or field artillery unit. All of them would be stabilized in their new unit for the rest of their first enlistment. Also, those who reenlisted could continue to serve in the same unit, and career soldiers in these units would be stabilized for up to six years.

Many of the Army's units are located outside of CONUS in Europe, Korea, Panama, and other places. Today these units are kept up

to strength by assigning soldiers to them individually, one by one. Soldiers in these units arrive and depart at different times and they stay for different lengths of time. As a result, squads and crews don't usually have the same people in them for more than a few months. Under the new system, the soldiers and leaders of most combat arms units in CONUS would move to an overseas location together. The posts in CONUS to which these units are assigned would be their homebase and after each overseas tour a unit would return to its homebase.

For example, some units would spend three years at their homebase in CONUS, rotate to Europe with families, serve three years there, and then rotate back to their homebase. Combat arms in Korea would be supported by units which spend two or three years at their homebase in CONUS, rotate overseas for one year without families, and then rotate back to their homebase in CONUS.

The stabilization, unit movement,

and homebasing features of the new manning system would be supported by a combat arms regimental system. Combat arms regiments would be formed by grouping several of the same kinds of combat arms battalions under a set of regimental colors. Each battalion in a regiment would carry the regimental designation even though some of them would be located at the homebase in CONUS while others would be located overseas.

Combat arms units that move between CONUS or overseas locations would rotate with one of the units of the same regiment. There would not, however, be a regimental headquarters or a regimental commander. Regimental battalions would report to the local brigade commander, whether in CONUS or overseas. All combat arms soldiers would belong to, or be affiliated with, a specific regiment. Career soldiers could expect to be assigned to their regiment whenever they served in a troop assignment.

How would these changes make life better for soldiers and provide the chance to improve combat effectiveness? In several ways. The new system would build on the relationships and cohesion developed during OSUT by keeping soldiers together from the time they come in to the Army until the end of their first enlistment. This allows soldiers to get to know and trust the other soldiers they will be working with and the leaders they will be following during their first years of service. Under these circumstances, leaders would be able to work with the same soldiers for the longer periods needed to train them in more than basic skills.

Soldiers and leaders would have the time to develop mutual respect for each other's abilities. They would be able to learn how to work together as a cohesive team to build and maintain their unit's combat effectiveness. The families of soldiers assigned to these units would also benefit from the new system because soldiers would have a better idea of where they would be in the future. They would know that each time they serve with their regiment they would serve at least part of the time at the same homebase in CONUS. This would allow them to develop roots and establish ties with the local community.

The decision to adopt a manning system which focuses primarily on replacing units could also eventually change the way the Army does business in other areas. For instance, the new system could influence housing policies, training programs, or the way a new item of equipment is fielded.

However, studies and analyses can only answer some of the questions that must be solved before the system can be used to support all or even a large part of the Army. Many other questions can be answered more thoroughly by trying out a number of different ideas on test units. So, over the next two to four years several different ideas will be tried in a series

of tests involving a relatively small number of units.

This testing process has already started and the first part involves the 20 PROJECT COHORT companies. The soldiers in each of these 20 companies have been recruited and trained together and they will remain together in the same company for three years. Nine of the companies will stay in CONUS for the entire period while the other 11 move overseas as units after serving 18 to 24 months in CONUS. The seven companies scheduled to move to Europe will serve 18 months in CONUS before moving overseas.

After 18 months in Europe, all first-term soldiers who do not reenlist will leave the service. Career soldiers in these units, including first-termers who reenlist, may then be reassigned to other units, or they may stay in the unit to serve as the cadre for a new group of first-term soldiers. First-term or career soldiers in these Europe-bound units who want to have their families with them will have to agree to serve a full 36-month tour overseas.

The four companies scheduled to move to Korea will spend 24 months in CONUS and then move overseas without their families. After one year in Korea, these soldiers will return to CONUS to either leave the service, be reassigned, or serve as cadre for the unit. In these 20 units, which are called PROJECT COHORT companies, everyone arrives in a company at the same time, stays for three years, and then leaves the unit at the same time. This approach provides great stability at the squad, section, or crew level.

Under another concept that will be evaluated, first-term and career soldiers arrive and depart at different times, about 18 months apart. First-term soldiers stay in the same unit for their entire first enlistment and longer if they reenlist, but careerists are scheduled to stay in the unit for up to six years. Although this approach does not result in the same high degree of stability in

squads, sections, or crews as the PROJECT COHORT approach, it allows the company to operate continuously with a high percentage of the same people at all times. To evaluate this concept, several companies will be brought into the Army within the next year or so. All of these companies will move, one company at a time, to either Europe, Korea, Panama, or Alaska after serving 18 or 24 months in CONUS.

By late 1983 or early 1984, when the results of several one-company moves can be evaluated, a decision will be made as to whether or not additional tests should be conducted in which the three line companies of a combat arms battalion would move at one time. Depending on how effectively this can be accomplished, a decision may then be made to move an entire combat arms battalion at once. This entire series of tests will be conducted step-by-step. The results of each test will be carefully evaluated before a decision is made to go on to the next step. This means that there is no firm schedule by which these tests will be conducted. The Army will only do what makes sense. If the results of any test indicate that one method is clearly the most effective, a decision could be made to discontinue testing and to adopt that method on a large scale.

This cautious, step-by-step approach should allow the Army to avoid costly mistakes and determine the most effective way to operate a unit replacement system for infantry, armor, and field artillery units. It should also provide the experience necessary to determine whether other combat, combat support, or combat service support unit replacement can be handled the same way.

(Reprinted from DA Spotlight, June 1982) 

MAJ L. Erick Ohlsson, formerly a member of the Manning Task Force, is currently attending the Marine Corps Command and General Staff College in Quantico, VA.

View from the Blockhouse

FROM THE SCHOOL

Changes to the Individual Training Evaluation Program

The Directorate of Training Developments is currently developing Skill Qualification Tests and Soldier Training Products which incorporate recent changes announced by the Department of the Army. The changes are designed to provide greater flexibility, simplicity, and effectiveness by decentralizing the administration and scoring of hands-on testing to commanders and restricting the written test to MOS and shared tasks only. In essence, the new individual training evaluation program consists of three interrelated components:

- Unit-conducted hands-on diagnostic evaluations to support the commander's individual training program.

- Formal written Skill Qualification Tests (SQT) of MOS specific/shared tasks administered annually.

- Common task testing administered annually to all soldiers, Skill Levels 1 through 4, for training diagnostic purposes only.

The unit-conducted hands-on test offers commanders/trainers a useful method to evaluate the effectiveness of their training programs. The application of this valuable diagnostic tool is limited only by imagination and initiative. It can be integrated into weekly individual training conducted by section chiefs, reinforced by periodic "Mini-HOCs" at unit level, be incorporated into unit collective training, or be formalized as part of an external evaluation. Fundamentally, it affords commanders/trainers a medium to insure that evaluation is always an integral part of training. Major features of the hands-on evaluation program include:

- Hands-on scoresheets to be provided in Soldier's Manual Supplements (SMS) until new Soldier's Manuals with a revised format are published. The SMS will not duplicate the hands-on scoresheets that are already contained in most Field Artillery Trainer's Guides.

- Changes to Soldier's Manual task summaries in evaluative format will be included in the SMS.

- Initial distribution of Soldier's Manual Supplements will be made through Training Standard Office channels to unit commanders.

- Commanders/trainers determine the frequency of use and the tasks to be evaluated.

- Results are not to be reported for Enlisted Personnel Management System (EPMS) purposes. However, the Field Artillery School does need feedback for training development purposes. Trainers are encouraged to make liberal use of the questionnaires in the training products.

The formal Skill Qualification Test (SQT) has been changed to a single component (written) evaluation. It will be representative of MOS and shared tasks only; no common tasks will be included. While the test will be entirely written, the Field Artillery School will maximize the use of pictures

and diagrams to represent equipment in the construction of test questions. Major features of the written SQT are as follows:

- Results will be reported for EPMS and training diagnostic purposes.

- The test will have approximately a two-hour time limit. In FY83, there will be a minimum of 13 tasks with each task containing at least three questions. In subsequent years, there will be a minimum of 16 tasks tested.

- The test window has been reduced to three months in order to provide more timely feedback to commanders and training developers.

- The SQT Notice will consist only of a list of tasks (50 percent more than will be actually tested). There will be no sample questions. The notice will be published when the test window opens.

- There will be no separate "tracks"; i.e., separate tests within an MOS related to equipment or duty position. The Field Artillery School is developing written tests that are generic in nature, covering those tasks all soldiers within a specific MOS should be able to perform.

The Common Task Test is an extension of the current Common Task SQT with some important changes to improve its usefulness. Major features are:

- The test will be mandatory for all soldiers (skill levels 1 through 4) regardless of MOS.

- The results will not be used for EPMS purposes but is intended only as a training diagnostic tool.

- Commanders will administer the common task test within a 12-month window beginning second quarter FY83.

- The test will consist of approximately 17 hands-on tasks with backup written alternate tests.

- Evaluative scoresheets will be provided in the new Soldier's Manual of Common Tasks (SMCT) scheduled for production in first quarter FY83.

The revised individual training evaluation program offers new opportunities for commanders to assess the effectiveness of their training programs. It will provide flexible diagnostic tools for their use as well as streamlined input for EPMS purposes.

The Field Artillery School is vitally concerned with the quality and effectiveness of its soldier training products. Feedback from the field is essential. Comments and questions concerning the new program should be directed to the Directorate of Training Developments:

Commandant
US Army Field Artillery School
ATTN: ATSF-DI
Fort Sill, OK 73503
AUTOVON 639-1203/6376

FA tactics update conference

The School's Tactics, Combined Arms and Doctrine Department will conduct a Field Artillery Tactics Update Conference for FA tactics instructors who teach in branch and joint service schools and Army Mobilization and Readiness Regions.

The conference will begin at 1300 hours on 18 November at Fort Sill (immediately after the Fire Support Conference) and will conclude at 1600 hours on 19 November.

Tactics instructors should strongly consider attending both conferences. (LTC Gerzel, AV 639-5882)

Are you using the correct ARTEP?

The School has completed fielding of an entire new series of field artillery howitzer battalion Artillery Training and Evaluation Program (ARTEPs). To avoid possible confusion in field artillery cannon units as to which ARTEP to use, the following lists of current, superseded, and test edition ARTEPs are provided.

•**Superseded:** The following ARTEPs have been superseded and are no longer to be used for unit training. They are easily identified by their red covers.

ARTEP

No.	Title	Date
6-105	Field Artillery, 105-mm Direct Support Cannon Units	Sep 79
6-165	Field Artillery, General Support Cannon Units	Sep 79
6-365	Field Artillery, 155-mm SP Direct Support Cannon Units	Sep 79

•**Current:** The following ARTEPs are to be used for training by all field artillery cannon units except those equipped with TACFIRE. These books can be identified by their green covers.

ARTEP

No.	Title	Date
6-185	Field Artillery Battalions of the Infantry Division and the Separate Infantry Brigade	9 Feb 82
6-205	Field Artillery Battalions of the Airborne Division	2 Jul 82
6-365	Field Artillery Battalions of the Armored/Infantry Division (Mechanized), Separate Armored/Infantry Brigades (Mechanized), and Howitzer Batteries of the Armored Cavalry Squadron	30 Sep 81
6-445	Field Artillery Battalions — Nondivisional	29 Dec 81
6-705	Field Artillery Battalions of the Air Assault Division	24 June 82

•**Test editions:** The following test edition ARTEPs are to be used for training by those units that are now

equipped with TACFIRE (these are sent to the field artillery cannon units as they receive TACFIRE):

ARTEP

No.	Title	Date
6-185-1	Field Artillery Battalions of the Infantry Division and the Separate Infantry Brigade (TACFIRE)	30 June 82
6-365-1	Field Artillery Battalions (TACFIRE) of the Armored/Infantry Division (Mechanized), Separate Armored/Infantry Brigades (Mechanized) (TACFIRE), and Howitzer Batteries of Armored Cavalry Squadron	15 Jan 82
6-445-1	Field Artillery Battalions (TACFIRE) — Nondivisional	31 Mar 82

All field artillery ARTEP users may request additional information by calling the ARTEP Hotline (AV 639-2064), which is available 24 hours a day. A 90-second voice tape will record your message. Please, first state your name and telephone number so that you may be contacted in case of an incomplete call.

Units without access to AUTOVON can call commercial 1-405-351-5004/4020 or may write to:

Commandant
US Army Field Artillery School
ATTN; ATSF-DC
Fort Sill, OK 73503

Integration of fire support

A recent School inquiry was sent to maneuver brigade and field artillery battalion commanders concerning their techniques on integrating fire support and maneuver training. Some interesting results were received, and also some questions were raised on how fire support is perceived.

As expected, not all addressees responded, but there is a nagging suspicion that some commands are not doing a whole lot in promoting fire support. It may be that promotion of fire support is difficult for some units, considering their physical location and mission. While another possible shortcoming is that USAFAS has not covered all the bases in providing appropriate information and guidance.

Insofar as what does or does not work, 16 general areas were frequently mentioned as being most productive while seven were noted as problem areas. A review of those comments reveal the following:

•The category that received the highest degree of positive consensus from all respondents was the use of fire support in field training and command post exercises, training exercises without troops, and Army Training and Evaluation Programs, while habitual association of the fire support team (FIST)/fire support officer (FSO) with the maneuver unit was second in frequency mentioned. This was particularly important to maneuver commanders and Reserve Component (RC) units.

View From The Blockhouse

•Overall, live fire exercises were important, much more so to Reserve Component units than to active units.

•FIST/FSO attendance and participation in maneuver unit planning/training meetings was highly recommended by all units.

•Field artillery classes for maneuver commanders and staffs were important to FA units, but seemed even more important to maneuver units.

•Command emphasis and written planning guidance received a high overall recommendation.

•The FIST/FSO training for maneuver troops was significant for RC units.

•While important to all units, the use of subcaliber devices and simulators was particularly significant to maneuver forces. Reserve Component units felt 13F assignment reviews were needed to insure proper placement.

•Field artillery units expressed a desire for common training cycles and training areas with maneuver forces. A positive selling campaign was obviously a high priority for RC and active field artillery units.

•Exchange training with other fire support systems such as attack helicopters was also high on FA unit priority lists.

•Limiting the number of targets to insure complete and thorough planning was mentioned as an interesting approach to prevent a "measles sheet" phobia and resultant poor planning.

•Several FA commanders mentioned the value of including the utilization of fire support on officer efficiency reports.

•Several times active unit commanders mentioned that training field artillerymen in maneuver skills develops rapport and confidence.

•The use of task forces was equally important to active and RC units.

Some of the problems mentioned which have an impact on effective integration of fire support were as follows:

•The distance between supported and supporting units was a significant concern for RC units and an irritant for some USAREUR units.

•Having no opportunity to integrate fire support was mentioned by a number of nondivisional FA units.

•An impression that nondivisional units have no responsibility to maneuver elements if their current mission is general support. On the other hand, several general support units have found ways to integrate fire support training and to take opportunities to "sell" fire support to maneuver commanders.

•A shortage of FA personnel and training was primarily a Reserve Component FA problem.

•Active maneuver units indicated a need for more experience maneuvering with live artillery, while the shortage of ammunition allocation is a problem for all fire support systems.

•A number of respondents indicated a need for more fire

support instruction at combat arms service schools. Depending on circumstances, about 40 percent of a commander's combat power could come from fire support; therefore it seems logical that more of a balance is needed between maneuver tactics and fire support utilization.

•Field artillery commanders expressed a concern that some maneuver commanders do not understand the type of guidance needed by fire support personnel to properly develop fire plans and support.

•Maneuver commanders were particularly concerned with the need to improve fire marking systems so that their soldiers could get a feel for the significance and impact live munitions would have on their mission. (Presently, fires are marked with pyrotechnics that are neither responsive nor representative of the explosive effects a soldier would experience.)

Some of the questions raised, but not necessarily answered, included:

•What skills/knowledge do armor and infantry officers and noncommissioned officers need to utilize available fire support resources?

•Do maneuver and field artillery commanders and staffs really understand the difference between divisional field artillery and nondivisional field artillery or direct support versus general support with respect to integrating fire support and maneuver training?

•Does everyone understand and plan on the possibility that a nondivisional unit may be given a direct support mission?

•Do senior FA commanders recognize their responsibilities to junior officers to insure that they are proficient as fire support team chiefs/fire support officers prior to their next assignment, even though their current assignment may not require these skills?

•What effect will the loss of combat experience through time, promotion, and attrition have on the relationship between those who provide and those who receive fire support?

•Do field artillerymen understand how important it is to provide training and seminars to maneuver commanders?

•Do maneuver commanders understand how to provide the field artilleryman with planning guidance that is neither too restrictive nor too broad in nature?

Where then do we go from here? Field artillery and maneuver commanders should take note of the basic concepts outlined in FM 6-20. Combined arms exercises with full participation by the FIST/FSO from the initial planning stages could overcome some of the problems generated by ammunition shortages. Also, training maneuver troops in fire support and training field artillerymen in maneuver skills would generate mutual respect and confidence. Getting in step on training cycles will facilitate combined arms training and developing task force operations. Greater emphasis on the use of subcaliber devices and simulators such as war

games (if fire support techniques are incorporated) will be an efficient and highly effective alternative to live fire and maneuver. Across the board, maneuver and FA commanders must recognize the availability and responsiveness of nondivisional artillery. They must internalize a concept for the habitual assignment of a FIST and FSO. Direct support *units* can easily be given other missions, and general support *units* could, and probably will, be given reinforcing and direct support missions. Finally, service schools should increase communications with their sister schools, especially through branch representatives.

An information package on how to integrate fire support in maneuver units has been developed from this study, and it has been mailed to all maneuver and FA commanders. A few minutes spent in studying that package can produce positive dividends in improving fire support. (Mr. John Bennett, DCRDT)

Standardization

In previous issues of the *Journal*, updates of the NATO Artillery Working Party and the ABCA Quadripartite Working Group on Surface-to-Surface Artillery have been given. In this issue, the development of a NATO STANAG (Standardization Agreement) and a ABCA QSTAG (Quadripartite Standardization Agreement) will be discussed.

For example, the development of STANAG 2144, "Call for Fire Formats," began when the NATO Artillery Working Party decided to adopt and adapt the ABCA QSTAG 225 "Call for Fire Formats" for NATO Artillery use. Since a model was already in existence, the draft of STANAG 2144 looked very much like QSTAG 225. Thus the work was started. It was found that, because of the requirement to translate the STANAG into the French language, certain terminology problems arose, but were subsequently resolved. The major differences centered around the national philosophies concerning the duties, responsibilities, and authority exercised by the observer and fire direction center. There were two general (and rigid) philosophies:

- The observer *requests* fire.
- The observer *orders* fire.

These are identified as Systems 1 and 2 and are explained in the STANAG (QSTAG).

After all the nations had ample opportunity to amend the STANAG, it was finally ratified and then promulgated. The ratification action consisted of formal agreement by the participating nations and promulgation, followed by publication of the STANAG showing national ratification and national reservations, if any.

Next, comes the most important sequence — implementation. This is accomplished by including the details of the STANAG into US Army Field Artillery Training literature; e.g., FM 6-series field manuals. The service school is also required to merge STANAG 2144 into

the program of instruction (POI) so that the resident and nonresident students are provided appropriate instruction on STANAG 2144.

It is important that US field artillerymen be familiar with the STANAGs that are implemented in US field manuals. It is especially important that US field artillery observers, liaison officers, radiotelephone operators, and fire direction center personnel be proficient in all phases of STANAG 2144 (QSTAG 225). An example of this implementation is shown in paragraphs B-4 and B-5 on page B-2 of FM 6-30, "The FA Observer."

In a future issue, we will discuss STANAG 2887 (QSTAG 217) "Tactical Tasks and Responsibilities for Control of Artillery." (Mr. B.M. Berkowick, USAFAS International Standardization Coordinator NATO/ABCA).

FM 6-10 rewrite postponed

Earlier this year, the School's Communication/Electronics Department (CED) saw a need to republish FM 6-10 because of many shortfalls in existing manuals with regard to field artillery communications; however, CED has decided the rewriting and republishing of FM 6-10 should be postponed indefinitely.

The Communication/Electronics Department still feels that there is a need to update published field artillery communications doctrine/procedures and to insure that the communications information is accurate and sufficiently detailed and complete for soldiers in the field. As such, CED will attempt to meet this need by continuing to take an active role in insuring that field artillery manuals (as they are written/rewritten) adequately cover communications and that revisions of tactical communications manuals produced by Fort Gordon are thoroughly coordinated with CED (e.g., FM 24-17, Tactical Telecommunications Center Operations; FM 24-1, Combat Communications; FM 11-50 Combat Communications Within the Division; FM 24-20, Field Wire and Field Cable Techniques; and FM 11-92, Combat Communications Within the Corps). If this can be accomplished so that all the necessary field artillery communications information can be incorporated in these manuals, there should not be a requirement for FM 6-10, Field Artillery Communications.

Point of contact at CED, USAFAS, is Mr. John Bilovecky, AUTOVON 639-4325/2501; address, Commandant, USAFAS, ATTN: ATSF-EOR, Fort Sill, OK 73503.

TACFIRE Users' Conference

The US Army Field Artillery School (USAFAS) sponsored the second annual worldwide TACFIRE users' Conference on 10-11 August 1982 to provide a platform for solving problems and raising issues within the TACFIRE-using community. Nearly all

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units currently fielded with TACFIRE sent a delegation, as did the 75th FA Brigade and 101st Div Arty, which are due to receive TACFIRE in the near future. Representatives from US Army Intelligence Command, Readiness Group Sheridan, US Army Field Artillery Board, Communications and Electronics New Equipment Training Team, TACFIRE Software Support Group, USAFAS, and several civilian contracting firms also attended the conference.

Following an opening address by MG Edward Dinges, Commandant, USAFAS, the assembly was briefed on training developments, new equipment, personnel, logistics, and system utilization/operation. Representatives devoted the second morning to small group discussions of lessons learned and reported the highlights of their discussions to the entire assembly in the afternoon.

An after-action report which highlights the topics of discussion at the conference is being disseminated to all representatives which attended. Other agencies/units desiring a copy may write or call:

Commandant
USAFAS
ATTN: ATSF-TT
Fort Sill, OK 73503
AUTOVON 639-3994/3465

The School will sponsor the third annual conference in the summer of 1983.

PADS added to some TOEs

The Position and Azimuth Determining System (PADS) has been authorized in field artillery tables of organization (TOEs) by Consolidated Change Tables (CCT) 300-69, 1 October 1980, as modified by CCT 300-70, 1 April 1981. Publication of modified tables of organization and equipment (MTOEs) normally follow the CCT in sufficient time to permit requisition of the new equipment a few months prior to fielding.

The School has received information that some unit MTOEs have been changed to reflect PADS authorizations even though the unit is not scheduled to receive PADS for two or more years. These MTOEs should be changed to reflect the pre-PADS survey party organization and equipment, pending notification of the appropriate date for conversion to the PADS MTOE.

Comments received from the field during staffing of the PADS Materiel Fielding Plan requested changes to the angle-measuring equipment authorizations implemented with the PADS TOE changes. These changes substituted the T16, 0.2-mil theodolite in conventional and PADS parties in the headquarters and headquarters battery (HHB), division artillery target acquisition battery (TAB), and Lance battery and deleted the target set, surveying, in the same units. The target set was restored to the Lance battery, TOE 6-597H, by Consolidated Change Table (CCT) 300-71, 1 October 1981, and to the TAB, TOE 6-302H/797H, by CCT 300-72, 1 April 1982. The School has requested that

CCT 300-73 (to be published 1 October 1982) include a change to restore the target set to TOE 6-302H, HHB, division artillery. The School has also requested that the forthcoming CCT include changes to the TOE to authorize the T2, 0.002-mil theodolite for all fourth order survey parties (conventional/Distance Measuring Equipment/PADS) as well as Lance parties. Unit MTOEs should retain the T2 theodolite based on the forthcoming change. The affected TOE/unit/parties are as follows:

TOE	Unit	Type Survey Party(ies)
6-302H	HHB, division artillery	Conventional/PADS
6-307H	TAB	PADS
6-597	Lance battery	Conventional/PADS
6-701H	HHB, division artillery (AA)	PADS
6-797H	TAB (AA)	Conventional/PADS

New Distance Measuring Equipment

A requirements document for a new infrared Distance Measuring Equipment (DME) is in the final stages of approval at HQ TRADOC and DARCOM. The new instrument, called the Survey Electronic Distance Measuring Equipment-Medium Range (SEDME-MR), will be commercial equipment, similar to the present DM-60 infrared DME. The range capability will be increased to 10 kilometers.

The instrument will be fielded in 1984 and will initially replace the Surveying Instrument, Distance Measuring Electronic (microwave) in fourth order survey parties. The SEDME-MR will also replace the DM-60 as the instruments wear out, resulting in the same DME for all survey parties. Use of the SEDME-MR will permit reduction of the present eight-man microwave party to six personnel with no reduction in the speed of survey operations.

Commanders Update

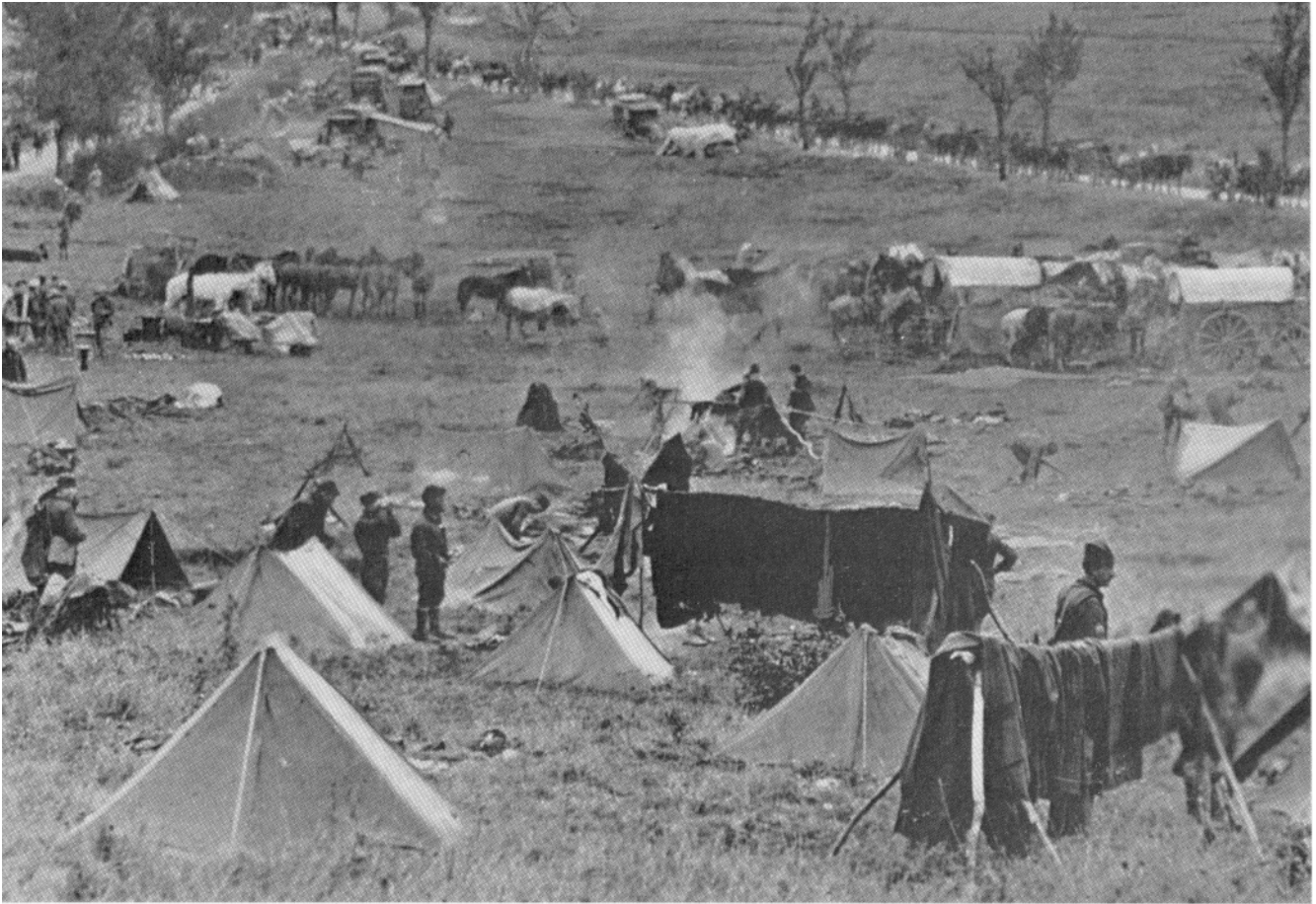
COL Thomas R. Stone
2d Infantry Division Artillery

COL Fred A. Gordon
7th Infantry Division Artillery

COL Michael E. McAleer
8th Infantry Division Artillery

COL Wilbert L. Jenkins
42d Field Artillery Brigade

LTC Jimmie R. Lackey
1st Battalion, 77th Field Artillery



The 123d Field Artillery 1917-1919

by LTC Ronald E. Olson

Breathe deep . . . the gathering dusk. Untainted by toxic gas and flaming oil. The winging death of maxim slugs and mind shattering explosions of artillery blasts. Breathe deep . . . for it may be your last!

As we took to the road about dusk that night, we realized we were coming close to the front, for in the gathering darkness the lightning to the north became more and more vivid, and we could from time to time hear the rumble of the guns. Red flares blazed and threw a lurid glow half-way across the sky and then died down again,

leaving blackness except for a constant flicker of light where the battle was raging.

Late in the evening we began to pass a stream of troops coming back from the front. They were a part of the division that was being relieved after several weeks of terrific fighting. First came a regiment of engineers, stumbling along over the shell-torn road, grumbling as they went. "I don't know what ailed them," Writes an officer in his diary, "but I never heard such a lot of growlers . . . One man stopped alongside my horse at a halt, leaned over and vomited. Then, in a matter-of-fact, disgusted way, he exclaimed, 'Damned gas!' and went on his way."

After the engineers came the infantry who cursed us softly from time to time for being in the way and for being mounted while they had to travel on foot. They had, however, overlooked the fact that at least half of our men were plodding along with packs like themselves.

They were particularly irritated by the presence of a band. "Look!" they cried, one after another, as they passed. "These guys have got their own band with 'em. You won't need any bands up there, buddie—you'll get all the music you want!"

At our halts, however, they stopped and chatted with us, telling us wondrous stories of their adventures with the Hun, and wished us joy. "Give 'em hell!" was the slogan all along the line. "Go to it! You'll need all the guns you've got."

Some time after midnight we passed through the skeleton-like ruins of a town, which, as an important road center, had been one of the main objectives in the allied drive. The streets were deserted except for an occasional military policeman. The clatter of horses' hoofs on the pavement resounded with a ghostly racket which contrasted sharply with the deep rumble of the distant cannon. As we moved along the road, now deserted except for our regiment moving up, my thoughts wandered back to our homes in Illinois—how far away they seemed!

Few regiments of the National Guard can boast of service as lengthy or as varied as that which the 123d Field Artillery rendered in World War I. Fate had crowded an amazing variety of action into the 27 months between the regiment's mobilization in March 1917 and its mustering out in June 1919.

The regiment entered active service as the Sixth Illinois Infantry in response to the President's call of 25 March 1917. Throughout the spring and summer of 1917, it performed guard duty at various government installations and riot duty in East St. Louis. The regiment's war service began in Illinois with the difficult task of converting an infantry organization into an artillery unit. Long periods of drill, weary hikes, constant changes, and trying waits preceded the supreme test in actual battle.

On 8 September 1917, the regiment entrained for Camp Logan, Texas and, at midnight on 19 September, the famous old Sixth Illinois Infantry passed out of existence and a new regiment, the 123d US Field Artillery, was born. The struggle to reorganize an infantry unit into a field artillery regiment began. This transition was highly successful as was shown in the reports a year later giving testimony of the regiment's development and effectiveness.

The 123d Field Artillery embarked for France on 26 May 1918, aboard the *Scotian* with COL Charles G. Davis in command. Subsequently, the submarine gauntlet was successfully run and the regiment landed at Liverpool, England, on 8 June 1918 without loss of life from the enemy activity. The channel was crossed on the night of June 11 on the transports *Viper* and *M. S. Miller*. Equipped with the famous Schneider 155-mm howitzers, the regiment

remained at Orans from 16 June to 23 August 1918, and range practice began.

From 26 August to 11 September 1918, the regiment served with the 89th and 1st Divisions in Lucey and Ansanville Sector. And, with the 1st Division, they participated in the Saint Mihiel Operation on 12-14 September 1918.

- The 1st Battalion, commanded by Major Dunavin, was assigned to support the 39th French Colonial Division and to batter Mont Sec, specifically the observation posts on the summit.

- The 2d Battalion, commanded by Captain Bickel, was assigned to support the attack of the American 1st Division and help cover the French 39th.

- The 3d Battalion, commanded by Major Cavanaugh was ordered to support the 39th French Colonial Division, cover the left flank of the 1st Division, and fire into the area of the 42d Division.

The 123d Field Artillery emerged from the battle with a citation from Major General Summerall, then Commander of the 1st Division. General Summerall praised the regiment for its devotion to duty and its efficiency in supporting the infantry over difficult terrain. His praise was doubly rewarding since he was an artillery officer.

On 15 September 1918, the unit moved to a sector northwest of Verdun. Major Bohan took command of the 2d Battalion and Captain Bickel was assigned to command the 1st Battalion in place of Major Dunavin who had been attached to headquarters as second in command of the regiment.

During the Meuse-Argonne Operation (26 September to 4 October 1918) the 123d was assigned to provide fire support for the 91st Division, while from 4 to 11 October it supported the 32d Division. The entire 58th Brigade was kept in line until 12 October, supporting the advance and protecting infantry units as they changed positions.

The 123d was conducting a forward movement in November 1918 when they received instructions to return for a rest, and the weary, but dogged, regiment marched slowly to the rear. However, the spirit of the organization was eloquently expressed in the curt answer of a private whom a pioneer major met at Avocourt on the way to the rest billets.

"Did they give you more than you could stand?" the major asked of the mud-spattered, plodding private.

"Nope," said the private, "they didn't give us more than we could stand; they just gave us all we wanted."

Proof of the regiment's standing came a little later when the 123d was selected from the entire American Expeditionary Forces as the one best suited for motorization. At that time, there was only one other regiment of motorized artillery in the American Army—the 11th Field Artillery. On 26 October 1918, the 11th Field Artillery, under the command of COL W. E. Peace, was attached to the 58th Brigade and moved into the position vacated by the 123d. There it remained until 11 November 1918.



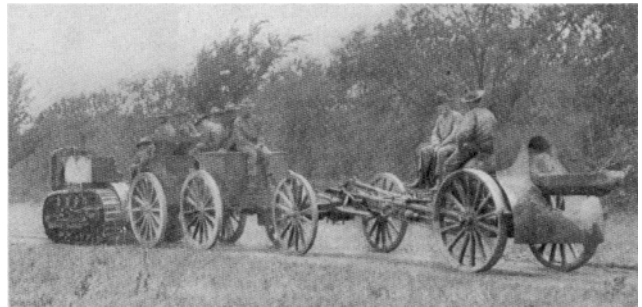
View showing 155-mm howitzer guns of an American battery of field artillery being prepared for action.

The 123d entrained for Doulaincourt expecting to be motorized and returned immediately to the front. Just before the regiment left, General Todd addressed the following memorandum to Colonel Davis:

"The brigade commander desires to express to the officers and men of the 123d Field Artillery his appreciation of the singular loyalty to the brigade shown on all occasions, by prompt and unquestioning obedience of orders, scrupulous regard to the necessity of keeping animals and material always in the best of condition, and the faithful performance of all the arduous duties consequent to two military operations of the first importance.

"He views with great regret the detachment of the regiment from the brigade at this time, but regards its selection for motorization before many other similar units as a tribute to its efficiency. Its work during the period of motorization will be followed with keen interest and its return to the brigade eagerly awaited."


Just as the new equipment was being issued, however, the armistice was signed. The regiment remained in the vicinity of Doulaincourt until January 1919 and then rejoined other regiments of the 58th Brigade and moved northward toward Luxemburg. The 123d with its motor equipment easily made the trip in 12 hours, thus leading the other artillery regiments back to the infantrymen of the 33d Division (already quartered at Luxemburg) and became part of the Army of Occupation. The unit spent time training and participating in the divisional shows, during which it won the Sixth Corps motor show. General Pershing and Secretary of War Baker inspected
November-December 1982



Tractors formed an important part of the army equipment in France. The above illustration shows tractors hauling American cannoneers and French 155-mm guns.

the regiment in the divisional review on 22 April 1919, the last formal parade of the Illinois men before their homeward journey.

On 29 April 1919, the 123d entrained for Brest and a week later all units of the division had reached port; but it was not until May 16 that the 123d embarked on the transport *America*. The unit arrived at Camp Mills on 24 May 1919 and entrained on 3 June for Chicago where it paraded with the other units of the brigade.

On 9 June 1919, the 123d Field Artillery passed into history at Camp Grant, Illinois, after more than two years of hard service. It had been on active duty longer than any other Illinois National Guard regiment, and it had performed its duties with credit to itself, the state, and the nation. 

LTC Ronald E. Olson is the Illinois National Guard State Historian and also historian for the 2d Battalion, 123d Field Artillery, ILARNG.

Throughout the year, every year, at least one weekend a month, bankers like Victor Harris, farmers like Jim Spearman, steel fabricators like Carey Green, and air conditioning installers like David Dowdy leave their families and jobs. They travel to various locations throughout the country anywhere from one city block to more than 100 miles each way. These men belong to a very special group — the Army Reserve; but, even more than that, they are artilleryists with a demanding continuous mission.

Mission

A Reserve artillery battalion is charged with the responsibility of achieving and maintaining the training standards and performance objectives of their Active Army counterparts. In order to reach a level of proficiency necessary to function and stay alive on the modern battlefield, proper planning of available time (12 weekends and two weeks of annual training), equipment, and manpower is critically important.

Therefore, according to at least one battalion — the 4th Battalion, 17th Field Artillery, an 8-inch self-propelled howitzer battalion, headquartered at Raleigh, NC — the mission is quite simple. Train, maintain a certain level of training, and train some more. Should the battalion be activated, its mission would be no different than that expected of an Active Army artillery battalion, which is to move, shoot, and communicate. For the battalion personnel to be able to do these things in the field, they not only have to learn artillery procedures at the home station, but also learn how to survive on the battlefield.

Extensive prior planning and coordination goes into every aspect of the 4-17th's training (perhaps even more so than their Active duty counterparts). For example, acquiring the necessary equipment and personnel to support their four widely separated batteries is no easy matter. Equipment needed for monthly drills such as howitzers, ammunition carriers, and command post

Reserve Training

by CPT Robert D. Matteson



SGT Phillip Trainor plugs coordinates into FADAC as part of the hands-on portion of his Skill Qualification Test. Trainor is a radiographer with Rockwell International and lives in Durham, NC.

Elbert W. Kent, a Wilson resident and technician at the Wilson Memorial Hospital, demonstrates the new Mission Oriented Protection Posture (MOPP) suit to a class of Reservists as part of his regular duties as a staff sergeant in Service Battery, 4th Battalion, 17th Field Artillery.



David Dowdy, an employee of Southern Pipeing and a resident of Bear Creek, NC, fills a portable generator with fuel as part of his duties as a member of Headquarters Battery, 4th Battalion, 17th Field Artillery. The generators were used to power portable computers necessary for the training of fire direction computers in an artillery battery.

tracks are maintained at Fort Bragg and occasionally loaned to North Carolina National Guard artillery units. Also, coordination is required with the Maintenance Assistance Inspection Team (MAIT) from Readiness Group Bragg to provide additional training.

Additional support has recently been provided by the 1st Battalion, 73d Field Artillery (the unit's Active Army affiliate), assigned to the XVIII Field Artillery Brigade, XVIII Airborne Corps at Fort Bragg. The support of the 1-73d has been excellent. Previously, the 4-17th had to provide a higher headquarters from their own assets to operate in the field, which in turn stripped the battalion of the staff it needed to function. The Active Army unit provides directional input and support when possible, which is quite a morale booster for the Reserve unit.

Manning

In the past, only a portion of 4-17th's training could be implemented because of the administrative and logistical burdens. Now the Full Time Manning (FTM) program, designed to aid Reserve units to overcome these problems, is in existence and will relieve some of the burden.

In both Active and Reserve Army artillery units, there is a serious shortage of trained junior officers and middle grade NCOs. Thus, many individuals are doing jobs that they haven't been fully trained to do. Reserve artillery units have difficulty attracting lieutenants. Those who do join don't stay long because they are attracted to the Active Army. However, the Simultaneous Membership Program (wherein junior and senior ROTC cadets join a Reserve unit and function in leadership positions) has served to partially fill the void of junior officers.

Several explanations exist concerning the lieutenant shortages in the Artillery Branch within the Reserves. For example, with jobs in the civilian area at a premium, people

have to go where the jobs are, and these areas aren't always near USAR Centers that house artillery units. As a result, more and more officers are changing branches in order to affiliate with Reserve units where they choose to live. Another explanation, perhaps more critical than our mobile society, is the lower percentage of graduating ROTC cadets assigned to the combat arms.

In the past, ROTC cadets were assigned a particular branch in the February-March time frame based on the needs of the Army, and nearly half of those being commissioned received assignments to the combat arms. Today, however, if an officer doesn't desire to be in a combat arms, he selects a unit or branch which determines his assignment. Also, sighted as reasons for potential loss of artillery lieutenants to the Reserve program is the Active Army's recall program and the Officer Basic Course Commandants program.

Refresher courses

There are currently so many changes in artillery deployment concepts and advances in other important areas that Reserve FA officers and noncommissioned officers frequently need to attend refresher courses at Fort Sill. The wealth of information brought back to the unit creates confidence in our ability to fight and win on the battlefield. The Reservists learn about the new family of ammunition, current tactical concepts, and latest developments, which makes them feel better about their chances of battlefield success.

Training

Training is also confronted with problems. The Reserve's ability to keep first termers is hampered by the easy methods available to them to get out of the program. This hurts training because it creates a gap in our ability to promote enough trained soldiers to more responsible positions without stripping away the crew members on the guns.



Reservists from Headquarters and Headquarters Battery, 4th Battalion, 17th Field Artillery, study logarithmic tables, required knowledge to obtain field data as part of HHB's survey team.

Sometimes, individuals who have certain expertise are away, which leaves lower grade soldiers with no first line supervisors to assist with their development. On the other side of this, when the lower grade enlisted men are away for consolidated SQT training, the senior NCOs have no one to supervise. This makes it very difficult to reach that level of training that we want to maintain, causing repetition in some areas while, out of necessity, not covering others due to a lack of time and other detriments.

Home station training is geared toward getting ready for the field which requires about six months of classroom training. For most of the men, classroom training is boring. However, the service battery, unlike the firing batteries, does have vehicles available which allows them to alternate hands-on with classroom training. MAIT teams from Fort Bragg

visit about four times a year and assist with training in areas where there is a lack of expertise. During Annual Training (AT), the men do what they were trained to do at home station.

The battalion S4 maintains the staff section at his home station in Wilson, NC; but, when other units undergo command inspections and inventories, he loses those assets to other units. And, when his 13Bs are not hauling ammunition, he has to send them to the firing batteries to get the SQT training they need.

There is no doubt that problems do exist within Reserve artillery units; however, some of these problems aren't limited to artillery nor even to the Reserves. Recently the 4-17th began an increased retention program to develop more incentives to keep middle NCOs and junior officers. They plan to develop a more challenging training

schedule and better orientation program and to look into the problem of mismatched MOSs.

The training of a Reserve artillery battalion is a very time-consuming and costly undertaking, considering the areas of lost talent and travel time for both the men being supported and those supporting the unit. Many members of the 4-17th FA travel more than 90 miles to be with one element or another of the battalion when they could be in a Reserve unit in their home town. They do so because they like it and feel that it's important, but most of all because there's nothing quite like those big guns. ❏

CPT Robert D. Matteson (Infantry) is the Public Affairs Officer, 120th US Army Reserve Command, Fort Jackson, SC.

Field Artillery Journal

Right by Piece

NOTES FROM UNITS

Battery to battalion

FORT LEWIS, WA — Battery E (Target Acquisition), 333d Field Artillery, became the 5th Battalion, 333d Field Artillery, on 22 July 1982. The new battalion is the only divisional target acquisition battalion in the Army. The unit, organized into two batteries (Headquarters and Battery A), can still be known as a TAB, except that the "B" is for battalion, not battery.

The enlarged target acquisition unit is part of the changes underway in the 9th Infantry Division as it becomes the Army's first high technology, light division.

"The significance of this battalion," said COL Raymond Haddock, division artillery commander, "is that it will assist in the destruction of the threat's numerical superiority by its quick acquisition of priority targets and the rapid manner in which we can place effective fire on these targets."

The unit was originally organized on 5 August 1917 as Battery B, 333d Field Artillery Battalion, and saw combat in both world wars. Since World War II, when it fought in Normandy and the Ardennes in France, it has been activated and inactivated until finally on 5 February 1977, it was reborn as Battery E, 333d Field Artillery, and, in November of that year, was assigned to the 9th Infantry Division.

A partnership with the past

AUGSBURG, GERMANY — Members of the 1st Battalion, 30th Field Artillery, of the 17th Field Artillery Brigade, are proud to announce a newly acquired and unique partnership with Battery F, 2d US Artillery (Reactivated), formerly of the Union Forces during the Civil War.

This partnership is special since Battery F is an honorary unit comprised solely of German civilians whose professions range as widely as their home locations. For example, there is a dentist from Munich, a stone mason from West Berlin, and others who share the common bond interest in the American fighting force, past and present.

Many of the members have ancestors who immigrated prior to or during the Civil War era and fought alongside the Rebels or Yankees. Most of the German immigrants, however, felt strongly for the Union cause since they were against slavery in any form. Also they believed that the Rebel faction intended to bring about a style of government very similar to one they had left behind in their homelands. Coupled with this ancestral involvement is a general fascination shared by many European history buffs regarding the Civil War. This was a period of change and turmoil that brought about many "firsts" which have since evolved into standard procedures and

common equipment.

During a recent field training exercise at the Major Training Area in Grafenwoehr, the "Hard Chargers" of the 1st Battalion, 30th Field Artillery, hosted the members of Battery F for two days. The guests dined with the battalion, observed the unit and their artillery in action, and were afforded the opportunity to fire some of the battalion's weaponry, primarily the M72 light antitank weapon (LAW) and the M203 grenade launcher. They were impressed by the equipment and managed to become fairly proficient in a short time.

It was easy to identify the visitors by their uniforms which were the blue and gold of the Union Army, circa 1861-1865. They not only had complete and authentic uniforms of the era, but they also had accouterments to include a fully equipped ammunition wagon. While at Grafenwoehr, Battery F was able to put the howitzer to the accuracy test for the first time with ammunition they had molded themselves. Though the mountain howitzer was not quite as accurate as our modern 8-inch howitzer, the shadow of history recreated by the muzzle blast of the mini-barrel and the great billows of black powder smoke was truly glorious.

The members of Battery F, 2d US Artillery, thanked all the men of the 1st Battalion, 30th Field Artillery, and left the training area with smiles on their faces and the acrid smell of black powder clinging to their clothes. (SP5 Kim Dary)

The Germans, in their blue and gold uniforms, fired their mountain howitzer, using ammunition they had molded themselves.



TACFIRE AM/Digital Communication

FORT SILL, OK — This past summer a major breakthrough was achieved by the 212th FA Brigade, then commanded by COL James W. Wurman. In a "first," sustained TACFIRE AM/Digital communications was attained in a joint effort between the 1st Infantry (Mech) Division Artillery, Fort Riley, KS, and the 212th Field Artillery Brigade (TACFIRE), Fort Sill. Several previous efforts had been attempted at long range AM/Digital shots between the 212th FA Bde and the 1st Cav Div Arty; however, they were not successful until the AM radios had been peaked and aligned to technical manual specifications.

The concept behind experimenting with, developing, and improving digital capabilities was to break the digital communications barrier of 10 to 15 miles presently encountered when using the AN/VRC-12 series FM radios and the RC-292 antenna.

The TACFIRE AM/Digital linkup is accomplished by using the AN/GRC-106 AM radio located in the AN/GRC-142 radio teletypewriter rig. Digital information is then transmitted by a series of audio tones sent at a high rate of speed. Passing clean digital traffic requires much lower specification tolerances of receiver sensitivity, frequency accuracy, and modulation level than is required for normal teletype traffic over the AN/GRC-106 radio. Because of the difference between the carrier modulation for FM and AM, the computer key time must be slowed to 2.1 seconds and the hit rate to 600 bits per second (BPS). Both units' fire direction centers (FDCs) must use AN/GRC-106 radio sets and the AN/GRA-50 doublet directional antenna to receive a satisfactory AM voice signal. The radio sets are then remoted into their respective shelters using the AN/GRA-6 remote set. Once clear voice traffic has been established, the two FDCs attempt AM/Digital communications. Thereafter, the TACFIRE fire direction center computers can pass ammunition information, fire unit data, and nonnuclear fire planning messages. During the TACFIRE AM/Digital linkup between the 212th FA Bde and the 1st Inf Div Arty, over 300 messages were passed in a two-hour period.

AM/Digital communications show much promise as an effective link between division artillery fire direction centers and supporting units. As such, further development of this AM/Digital capability will enhance peacetime training opportunities between division artilleries where divisional units are separated by more than the FM range; also, it will afford division artilleries the ability to refine techniques for limited mutual support. TACFIRE AM/Digital communications will allow greater freedom of movement to field artillery battalion commanders while still enabling consistent communications with their brigade or division artillery. (CPT Mark Miller and 1LT Rick Paradise, 212th FA Bde)

Hawaiian firing exercise

SCHOFIELD BARRACKS, HI — Fifty-three artillery rounds leveled a 150- by 250-meter area of Pohakaloa Training Area (PTA) on the "Big Island" of Hawaii in late August this year as the "Tropic Lightning" (25th Infantry Division Artillery) completed its largest firing exercise in two years.

The firing exercise (FIREX), which took place 25 through 28 August at Pohakaloa Training Area, involved all howitzers assigned to the 25th Inf Div Arty, and then some.

According to MSG Sanford Swope, Operations NCO, "Most of the training div arty does through the year is conducted at either battery or battalion level. Only on rare occasions can all div arty units train together.

"Sure, we were out there meeting requirements for ARTEP-type tasks, within training and safety constraints," said Swope, "but we were operating as if we were in actual combat."

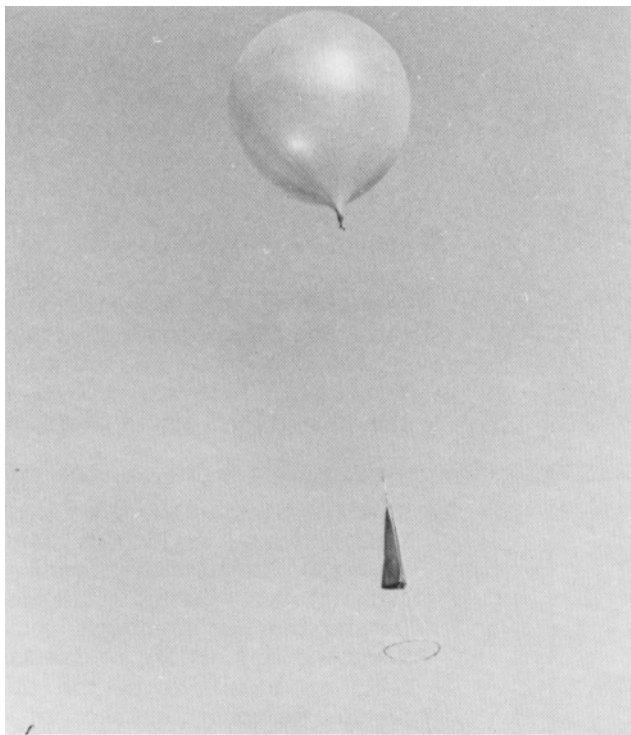
Participants in the FIREX included the 1st Battalion, 8th Field Artillery, the 2d Battalion, 11th Field Artillery, and the 3d Battalion, 13th Field Artillery; more than a half-dozen F-4 "Phantom" fighter planes from Clark Air Force Base, Philippines for close-air support; and D-TAB, 26th Field Artillery.



Gunner CPL Sam Beverlin, "Twisters," C Battery, 1st Battalion, 8th Field Artillery, 25th Infantry Division Artillery, rides a 155-mm howitzer through its recoil as assistant gunner PFC Louis Holland, of the same unit, fires the round during a massive FIREX conducted on Hawaii's Pohakaloa Training Area. (Photo by Janos Gaspar)

CREDIT

The photographs used in "Right by Piece," September-October 1982 issue supporting a short article on the Multiple Launch Rocket System (MLRS) were provided by SP5 Mike Howard, Public Affairs Office, Fort Sill.



Personnel from the division artillery meteorological team send up a weather balloon with a radiosonde attached. (Photo by Rolly Bain)

"Sky" high morale at ARTEP

CAMP ROBERTS, CA — Camp Roberts' hills were again alive with the sounds of the big guns from Fort Ord's 7th Infantry Division Artillery, thundering through their Army Training and Evaluation Program (ARTEP) during past weeks. As the assistant gunner pulled the lanyard, it tripped the percussion hammer to send a high explosive round onto a target as far as 30 miles away.

How much preparation is involved in this type of operation? Several teams of technicians calculated and submitted data on air temperatures, light, wind velocity, and other observations before the gun was fired. Timing is an important factor, so before the gunner pulls the lanyard he listens to the countdown from one minute to the final second which was selected to fire. This second is determined by calculations based on the chemistry of the environment, the sounds of previous rounds which were measured by sophisticated instruments, observations made on powerful binoculars and battery commander (BC) telescopes. Highly trained observers relay this information to the tactical operations center before it is passed on to the firing battery.

The division artillery's meteorological section is equipped with technology that only an artillery soldier can appreciate for its true worth to a mission. The radiosonde is an instrument which is hooked on a balloon and turned loose into the clouds. It picks up and transmits back information on the details of temperature and humidity in the

atmosphere. During an 18-hour period the meteorological team sends five of these instruments into the upper air.

The sound and flash team, part of the 333d Target Acquisition Battery (TAB), starts its work after the first round is fired. They record the sound of the round which is measured to reveal direction, speed, point of origin, and probable impact location.

With this information, the 333d TAB soldiers can instruct the artillery gunners to adjust the weapon for greater accuracy.

At a meeting with the soldiers during the exercise, Div Arty Commander COL Thomas D. Reese told the soldiers, "I am very proud of the sky high morale which has been maintained throughout the exercise, and everything indicates that we have in fact been having a year-round ARTEP; this is only an outing where we are evaluated by a few select artillery soldiers." (Rolly Bain)

Noncommissioned officers hold FTX

FORT CARSON, CO — In August this year, a field training exercise (FTX) was conducted entirely by the noncommissioned officers and enlisted members of the 1st Battalion, 20th Field Artillery. They participated in fire missions and Skill Qualifications Tests for observation point personnel.

The purpose of the exercise was to allow the noncommissioned officers to develop and exercise leadership skills and enhance confidence in their abilities. Also, the FTX was to acquaint new personnel with what goes on downrange and prepare the unit for its Army Readiness Testing and Evaluation Program.

Fort Carson forward observers recheck for a fire mission while taking their Skill Qualification Test. (Photo by PFC Eric Albrecht)



"Let's go look at your supply room, Mike." As I reluctantly led the way for my battalion commander, I could feel my enthusiasm for the day quickly slipping away. Since there were certainly much more interesting things on the unit schedule for the battalion commander, why waste a beautiful day in the supply room muddling through some dull sub-hand receipts?

Like it or not, a battery commander must devote considerable effort to property accountability and inherent with this responsibility is the establishment of a sub-hand receipt system which identifies and replaces shortages. Unfortunately, the entire subject of property accountability eats up the commander's time, dulls his enthusiasm, and keeps him away from the more exciting activities such as live fires or aerial movement of ammunition. However, if the battery has a well-organized sub-hand receipt system, the commander's time in the supply room can be minimized without sacrificing control of his property.

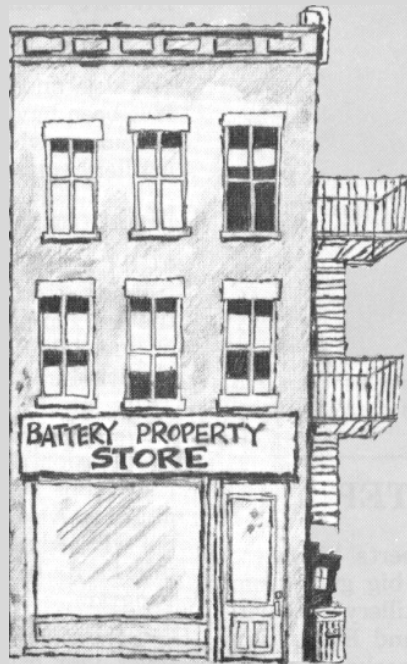
The method of organizing a battery's sub-hand receipt system proposed herein substantially reduces time and effort and frees the commander to do the many other things requiring his attention.

Regulations and Procedures

There are several regulations governing the property system; yet no single reference exists today. At company or battery level, these regulations present a disjointed picture of the property accountability "system." Army Regulation 710-2 governs the technical niceties of sub-hand receipts and component listings on DA Forms 2062. This form is used in accounting for major end items and their integral components of the basic issue items list/additional authorization items (BIIL/AAL). Yet another regulation (AR 735-11) dictates the procedures, formats, and forms for relief from accountability documents (Statements of Charges, Government Property Loss or Damage Reports

MINDING THE BATTERY'S PROPERTY STORE

by CPT Michael J. Brady



(GPLDs), Cash Collection Vouchers, and Reports of Survey). These relief from accountability or "adjustment" documents bear directly upon items listed on the sub-hand receipt DA Forms 2062 as governed by AR 710-2.

Other regulatory sources such as TM 38-L22-12, DA Pam 710-2-1, and local procedures give the technical details for completing requisition documents to order known shortage items listed on the DA Forms 2062. Included among the requisition documents are DA Form 3161, DA Form 2765-1, and DD Form 1348-1. The location of pertinent instructions in three separate sources presents a "triple threat" to property accountability and creates a tendency to focus on pieces of the system rather than on the system as a whole. Also,

these different regulatory sources hinder a fundamental understanding that accounting forms, adjustment documents, and requisitioning forms are completely interrelated.

Collection and organization of all transactions pertinent to each sub-hand receipt holder into a standard file reduces confusion and saves the commander's time. It is recommended that all property transactions be placed in a three-ring binder, subdivided into six major sections by cardboard separators. Document protectors should hold the forms within each section.

The first major section in the notebook contains the DA Forms 2062 listing all major end items from the computerized organizational property listing. If the major end item has an integral component listing, BIIL, or special tools as identified in the applicable technical manual or supply catalogue, the line on the DA Form 2062 will list the appropriate annex where the DA Forms 2062 used to account for them can be found.

The second section contains DA Forms 2062 for the components, BIIL, or special tools pertaining to the major end item (listed as a one line entry in section one). The number of major end items which have integral components, BIIL, or special tools determines the number of annexes within this divider.

The third section contains requisition documents (DA Forms 3161, DD Forms 1348-1, and DA Forms 2765) for items that the sub-hand receipt holder is short. Copies of the completed DA Forms 3161 and/or DA Forms 2765 with quantities and pricing data are placed in document protectors within this section. Document numbers are easily determined by referring to the specific forms and should be used in verifying the requisition status of items on order. The section also doubles as the sub-hand receipt holder's Shortage Annex for items not on hand. By placing all known shortages in the same location within the sub-hand receipt, property managers (commanders, supply officers, supply sergeants,

or hand receipt holders) have a readily available "shopping list" to aid in reducing known shortages.

Department of the Army Forms 3161 and 2765 constitute the Shortage Annex itself and need not be transcribed to a separate piece of paper or onto a DA Form 2062. Items still short but not on order may be hand written on a blank DA Form 2062 with the national stock number (NSN) and pricing date obtained from the monthly Army Master Data File until ordered. Using DA Forms 2765 and DA Forms 3161 as Shortage Annexes insures that shortages are being placed on valid requisition, and putting the order document with the sub-hand receipt makes it easy to insure that missing items are, in fact, on order. This proximity *forces* the supply sergeant into ordering shortages. Orders should be organized by sub-hand receipt number, which should be placed on the face of the requisition documents. When shortage items arrive in the supply sergeant's office for issue (with a copy of the order document attached from the Class II, IV, or VII warehouse), he can easily identify who in the company placed the order by referring to the order document itself.

The fourth section of the sub-hand receipt contains any relief from accountability documents pertaining to the sub-hand receipt holder. These documents include Cash Collection Vouchers, Statements of Charges, GPLDs, Reports of Survey, and Turn-in Documents. Including these documents in the sub-hand receipt holder's notebook makes it easy to see if correct action is being taken on shortages and also allows the commander to determine with a quick glance how each of his sub-hand receipt holders is maintaining control of property. This section must be cross-referenced against the preceding requisition section to insure that adjusted losses are also being ordered.

The fifth section within the three-ring binder should contain a DD Form 1150 Transaction File to record property transactions pertinent

to the sub-hand receipt holder and those occurring between inventories. This file should be purged concurrently with the conduct of a new inventory and/or updating of an adjustment column on one of the DA Forms 2062 found in sections one and two. Examples of use of the DA Form 1150 Transaction File include:

- Turn-in of unserviceable tools.
- Issue to the sub-hand receipt holder of items previously listed as shortages.
- Turn-in of a major end item or accountable item of property.

The transaction file can be easily checked by comparing the dates on the DD Form 1150 with the dates on the DA Forms 2062 located in sections one and two.

The sixth major section of the notebook should contain a second major end item DA Form 2062 (in a document protector) listing all station property signed out to the sub-hand receipt holder. This section is similar to section one (organization property major end items).

The final item to be included in the three ring binder is a signature card, DA Form 1687, with the sub-hand receipt holder's signature. This should be taped inside the front cover.

Now that the sub-hand receipt notebook has been organized, let us discuss the use of the new system. First, we examine the DA Forms 2062 for the major end items and components in the first two sections, looking for obvious errors:

- Has the DA Form 2062 been signed by the current sub-hand receipt holder within the past six months?
- Have quantities changed from adjustment column to adjustment column?
- Do the property quantities match the organizational property printout quantities?

Second, are there any shortages? The best place to look is perhaps on a component annex containing several tools. From the M548 ammunition carrier annex, we determine that two inventories have recently transpired. In January the adapter, grease gun; hammer, hand; and wrench, box were

all on hand. Later in March another inventory was conducted and another adjustment column completed. Now, however, the adapter, grease gun; hammer, hand; and wrench, box are marked as not being on hand. Now, we look at the fourth section to determine how the loss was accounted for and there we find a Statement of Charges dated 22 March. Are the three missing items on order? Let us turn to the major divider and see — but wait, the supply sergeant has indicated that these tools were received just two days ago. Where are they — in the supply room? Or, have they been issued to the sub-hand receipt holder? We check the DD Form 1150 Transaction File and find a DD Form 1150 executed between the supply sergeant and the sub-hand receipt holder dated today. Of course, this DD Form 1150 remains in the Transaction File until the entire sub-hand receipt is either inventoried or updated.

The beauty of this system lies in its simplicity. In order to check the system, one does not have to go to five or six different locations in the supply room's filing system to trace the flow of property accountability. It is all there in the notebook! Also, one does not get misled by finding requisitions or adjustment documents that pertain to other like items belonging to other sub-hand receipt holders.

A functional, well-organized sub-hand receipt system, coupled with frequent checks by unit leaders, allows the unit commander more time to attend to other necessary aspects. With such a system, he should be able to get the battalion commander out of the battery supply room and into the field without short-changing control of his property. ☒

CPT Michael J. Brady, former commander of Battery B, 1st Battalion, 13th Field Artillery, is now attending the Russian Language Basic Course at the Defense Language Institute in Monterey, CA.

Redleg Newsletter

ITEMS OF GENERAL INTEREST

Civil education for officers

Each year the Army selects approximately 500 to 600 officers to attend advanced civil schooling. Although the officers selected for advanced schooling view the assignment as a personal benefit, the Army's civilian education program is driven by requirements. The Army provides these officers with an educational opportunity and then assigns them to positions calling for that education periodically throughout the rest of their careers. Because professional development officers at MILPERCEN receive literally thousands of inquiries concerning graduate school, the following paragraphs provide general information on graduate schooling to answer some of the most often asked questions.

The individual officer is the best manager of his or her own career. Officers must decide what they want from their career in best serving the nation and meeting personal needs. An advanced degree alone does not enhance promotion potential — performance is what counts! However, since an advanced degree does generally assist officers in the performance of their duties, it therefore benefits both the officers and the Army.

Officers interested in an advanced degree should read AR 621-1, Training of Military Personnel at Civilian Institutions. It covers most of the Army's education programs.

The Army's education programs are based on requirements for officers with advanced degrees. These requirements are established by the Army Education Requirement Board (AERB) which meets annually in Washington DC. The process for determining requirements begins in the field where commanders and senior staff officers identify positions which require officers with an advanced degree to perform adequately. Commanders submit requests in accordance with AR 621-108 to MILPERCEN, which consolidates all requests by specialty and forwards them to specialty proponents. The proponents review, add, and delete requests. This step generally standardizes the educational requirements for similar positions.

A general officer serves as president of the Army Educational Requirements Board, and voting members represent each specialty proponent. The board reviews the requests, votes on each request, and recommends a list of billets to the Deputy Chief of Staff for Personnel (DCSPER) for approval. Approved billets are commonly referred to as AERB positions. The next AERB is scheduled to convene in January 1983.

In order to provide a pool of officers to serve in AERB positions, the Army selects officers at approximately the sixth to eighth year of officer service for full time schooling. These officers study in a discipline that supports their specialty(s) for

up to 18 months. Officers preparing to be USMA instructors are allowed up to 24 months of graduate schooling. Following graduate school, each officer is required to serve three years in an AERB position unless deferred by Commander, MILPERCEN. The Army then assigns officers with advanced degrees to utilization tours periodically throughout the rest of their careers.

The Army has two general categories of educational programs: fully funded and partially funded. Under the fully funded program, the Army provides a permanent change of station (PCS) move, full pay and allowances, tuition, and up to \$200 per year toward textbooks and supplies. The partially-funded program is similar, but the officer must pay for his own tuition (many have used veteran's benefits), textbooks, and supplies. Under either program, the first step is to be approved by MILPERCEN.

Officers interested in being assigned as full-time advanced degree students should accomplish the following:

- Read AR 621-1.
- Telephone or write their professional development officer to determine an appropriate academic discipline.
- Photocopy the application form in the back of AR 621-1, fill it out, have it indorsed, and mail it to: Commander, MILPERCEN, ATTN: (appropriate branch), 200 Stovall Street, Alexandria, VA 22332.

Professional development sections at MILPERCEN consider officers for graduate school based on the following general criteria:

- Company grade professional development, such as advanced course and company command completed.
- Availability for PCS.
- Top notch evaluation reports.
- Undergraduate academic record that indicates a likelihood of success in graduate school.

Officers can enhance their selection potential by planning ahead. They should talk to their professional development officers, find out what degrees will support Army requirements, and take the appropriate tests, such as the Graduate Record Exam or Graduate Management Aptitude Test. Since these tests are offered only a few times each year, it is important to know admission requirements for desired schools and to schedule admission tests accordingly. Additionally, officers increase their chances for selection by completing the school application process in a timely fashion, as requested by the professional development officer. Finally, officers should apply at schools where resident tuition rates apply.

In summary, the Army sends officers to advanced civil school in order to fill AERB positions. Officers go to school at about their sixth to eighth year,

serve an immediate utilization tour, and then serve subsequent utilization tours periodically throughout their careers. Officers increase their chances for selection as a graduate student by being familiar with AR 621-1, insuring that professional development goals are met, and accomplishing the application process well in advance of the desired school start date.

MILPERCEN professional development phone numbers are as follows:

	AUTOVON 221
•Combat Arms Division	7820
•Combat Support Arms Division	7427
•Combat Service Support Arms Division	9697
•Warrant Officer Division	7843

(MAJ Paul D. Terry Jr.)

Overseas tour lengths cannot be reduced

The Army will be unable to reduce some overseas tour lengths for single career personnel because of the \$25 million per year cost and the turbulence that such a change would entail. However, the requirement that personnel must serve the shortest "accompanied by dependents" tour in certain overseas areas will be retained.

The current overseas tour length is three years for single career soldiers assigned to Europe and Japan and other long-tour areas, while single first-termers are required to serve only 18 to 24 months overseas.

While the new DoD policy does allow the option of choosing the longer "with dependents" tour or the shorter "all others" tour, deleting the longer tour for single personnel would be an unmanageable change for the Army due to large commitments overseas.

The continued policy will affect those soldiers assigned to most areas in Europe, Canada, Hawaii, Australia, New Zealand, and Japan.

Additional information on this policy is contained in AR 614-30, "Overseas Service."

NCOs needed as Defense Attaches

Noncommissioned officers (NCOs) are needed in grades E5 through E7 to fill worldwide positions in the Defense Attache System (DAS). Prerequisites, application procedures, and duty stations are contained in AR 611-60.

Preparation for an attache assignment, including travel and training, takes from 4 to 18 months, depending on the length of language training, if required. Administrative orientation, attache training, and language training are normally given in Washington, DC.

Especially needed are personnel who possess excellent foreign language skills or have a qualified Defense Language Aptitude Battery (DLAB) test score. Although

personnel may volunteer for attache assignments worldwide, specific needs exist in Hungary, Poland, Bulgaria, China, Jordan, Zaire, Ghana, Cameroon, Yugoslavia, Colombia, Ivory Coast, USSR, Turkey, Nepal, and Sudan.

Interested NCOs are encouraged to contact the Attache Support Division, USAASD, INSCOM, Fort Meade, MD 20755, AUTOVON 923-6001/6027.

Clothing on military flights

Some commanders still are authorizing Army personnel to wear civilian clothing during travel on Military Airlift Command (MAC) flights. Army personnel are required to wear uniforms on MAC or MAC contract flights departing from military terminals except when civilian clothing is mandatory at point of debarkation. Appendix E, AR 670-1, lists those countries where wear of military clothing is mandatory. Commanders may authorize wear of civilian clothing for personnel traveling by commercial or private transportation.

Field Artillery Branch

The Field Artillery Branch, Officer Personnel Management Directorate, US Army Military Personnel Center has recently undergone several changes in members assigned. As such, the following information is provided for interested *Journal* readers.

- LTC Ken Simpson Field Artillery Branch Chief.
- LTC Dan Crawford..... Lieutenant Colonels Assignments.
- MAJ Ron Lucas Majors Nominative Assignments; Command and General Staff College.
- MAJ Lee Outlaw Majors Specialty Code 13 Assignments.
- MAJ Dick Durden Captains Nominative Assignments; Combined Arms and Services Staff School.
- CPT(P) Ken Lund..... Captains Specialty Code 13 Assignments.
- CPT Dave Ott Lieutenants Overseas Assignments; Officer Advanced Course.
- CPT Steve Curry..... Lieutenants CONUS Assignments.

All correspondence should be addressed to:

CDR, MILPERCEN
ATTN: DAPC-OPE-F
200 Stovall Street
Alexandria, VA 22332

Phone numbers are: AUTOVON 221-0116/0118/0187/7817 or Commercial: (202) 325-0116/0118/0187/7817.

Command and Staff College changes

In a move to streamline their professional development opportunity and to enhance their career potential, majors and promotable captains will find a chance awaiting them in the selection process for resident attendance at Command and Staff College.

As recently announced by officials of the US Army Military Personnel Center in Alexandria, VA, the change will take effect with the 1982 CSC Selection Board scheduled to convene this month (November). Its ramifications include a new eligibility zone for selection, a redefined attendance period, the elimination of screening boards, the elimination of an alternate list, and the retention of the 36-month stability criterion.

MILPERCEN officials are confident that the extensive review and analysis which led up to the change will pay a high dividend to the Officer Corps. Officers now can expect to see less turbulence in the company-grade sector, plus greater chance for developmental assignment. They'll also have their CSC-candidate records placed before the primary selection board rather than have them first run the gauntlet of a "prescreen board." They'll enjoy a better balance between education and operational assignments. And they'll be assured that CSC selection is generally congruent with promotion points to major under the Defense Officer Personnel Management Act (DOPMA).

In short, say officials, the change falls in line with Defense Department guidance for stability, recommendations of the Army's "Review of Educations and Training For Officers" study, the pertinent DOPMA provisions, and the overall training needs of the commissioned officer.

As to specifics, here's a point-by-point breakdown:

•**Eligibility:** An officer eligible for selection must be a major or promotable captain and not have reached the 14th year of active Federal Commissioned Service. Under the previous criteria, the candidate had to be a major or a captain serving between the eighth and 11th year of active Federal Commissioned Service. This rearrangement of the timeline, say officials, takes into account the fact that "company grade officers already have much to accomplish during their fifth through ninth years as they develop proficiency in their primary specialty, receive training and assignment in an alternate specialty, attend combined arms and services staff school, and polish skills learned at the school before selection and attendance at Command and Staff College." To ease the burden of overcommitment, officials chose the changing of the eligibility zone as the best remedy. For this year's board, the eligible population will include year group 68 minus previous selectees, attendees, and declines.

•**Attendance period:** Formerly the ninth and 14th year of service, the CSC attendance time now will be from the 10th and 15th year of active Federal Service.

•**No more screen boards:** All eligible officers will be considered by a single selection board headed by a general officer. The HQDA-Convened Board is to be expanded to insure wide representation among branches.

•**No more alternate list:** Future selection boards will select a fixed number of candidates. Those selected will be scheduled for attendance in accordance with stability guidance, number of school allocations, and operational requirements. Candidates required to replace students unable to attend in the scheduled year will be obtained from the list of selectees scheduled for a later academic year.

•**Stability criterion:** As was the previous case, the stability criterion remains at 36 months on station or full-tour completion before attending school.

The new selection process has built-in flexibility for dealing with the some 1,000 CSC seats to be filled annually. Over 50 percent of the eligible officers in a given year group now will be chosen for attendance. As in the past, every eligible officer will get at least four chances for selection to attend CSC, which is "the first competitive schooling" in the education process for officers.

Year groups 68 through 72 will be considered by this year's selection board in November. The results of the board will be announced in January 1983 (for August attendees), because of the lead-time required for development of eligibility lists.

Those captains and majors concerned may contact their local military personnel office for more details on the change. For this purpose, MILPERCEN officials have issued DAPC-OPA-E message (DTG: 311400Z Aug 82) announcing the processing instructions for the 1982 CSC Selection Board.

Junior ROTC instructors

Officers (O-1 through O-6), warrant officers, and noncommissioned officers (E6 through E9) who are retiring within one year or who have retired within the last five years may qualify as instructors in the Army Junior ROTC Program.

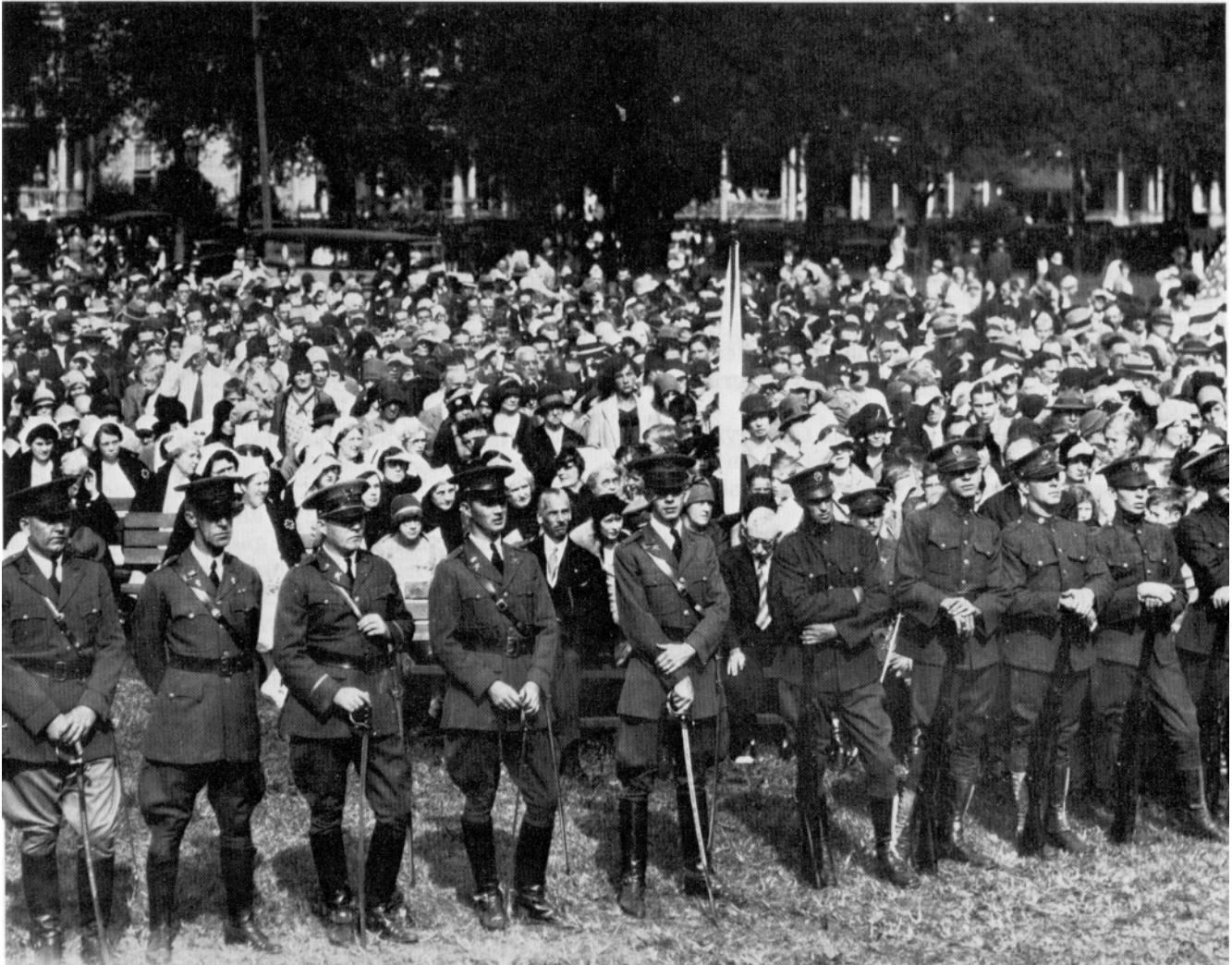
The Junior ROTC Program is offered at 711 high schools throughout the United States, as well as Puerto Rico, Europe, Guam, Korea, Alaska, the Virgin Islands, Canal Zone, and American Samoa.

The prerequisites for employment are to have 20 or more years of active service; if retired, not to be retired for over five years; and possess, as a minimum, a bachelor's degree.

Information on pay, working hours, benefits, etc., is available by contacting one of the following ROTC Region Headquarters: ROTC Region One, Fort Bragg, NC 28306; ROTC Region Two, Fort Knox, KY 40121; ROTC Region Three, Fort Riley, KS 66442; ROTC Region Four, Fort Lewis, WA 98433.

Other specific requirements on the Junior ROTC Program may be found in paragraph 6-15, AR 145-2.

THE JASPER GREENS



Members of the Jasper Greens attend a memorial ceremony in Savannah, GA, on the anniversary of the death of Count Casimir Pulaski. Pulaski, a Pole by birth, commanded American troops during the Revolutionary War.

by Bob E. Goodenough

On the evening of 21 July 1842, a group of men met in an old store in Savannah, GA, to form a society that would be both fraternal and military. The group was to be organized along military lines and governed by a military code. The chain of command, from captain on down, was to be elected and subsequently responsible for the well-being of the unit.

Membership would be accepted upon petition, with two sponsoring members vouching for the petitioner and requiring two-thirds majority vote. Dues for the men were \$50 a year for officers and \$25 for enlisted soldiers. Sixty-three officers and men signed the agreement and elected John B. Ward their first commanding officer. Since there were many Irishmen in the community, W. J. Kelly and John

Foley recommended that the group adopt the name "Jasper Greens" as their official title. After several meetings and much discussion, which included suggestions such as "Jasper Hibernians" and "Irish Fusileers," the name "Irish Jasper Greens" was formally accepted on the night of 25 August 1842. (The name "Jasper," was taken in honor of the gallant Sergeant William Jasper who had died in the heroic effort to retake Savannah from the British during the War for Independence.)

The Greens adopted an official uniform (blue pants with yellow strips) and were issued 75 "stands of arms." They were officially recognized by the State of Georgia as a viable military unit even though the years from 1843 to 1845 were peaceful.

In 1846, the Greens were to have their mettle tested when the conflict between the United States and Mexico erupted into a full-scale war. Governor George W. Crawford proposed a plan to organize 10 volunteer companies which would meet at Columbus to form a regiment. The Irish Jasper Greens was the only unit selected from Savannah. The company consisted of 84 men under the command of CPT Henry R. Jackson, who was named the regiment's colonel.

The campaign in Mexico was not a happy experience for the Greens since the Georgians were sent to Carmargo, reportedly the worst camp of all. There, they spent many grueling months before being transferred to Monterey. By then the regiment had lost over 300 men of the original 900 through disease. The unit remained there, guarding money trains and supplies, until June of 1847, when their one year of service was over and they returned to Georgia.

Throughout the 1850s and until the Civil War broke out, the Greens spent their time in drills, participating in parades and funerals of past members.

When South Carolina seceded from the Union in December 1860, there was great joy in Savannah. Many volunteer units in the area quickly mobilized and formed battalions to defend the "stars and bars." On 3 January 1861, three companies of volunteers, among them the Jaspers, were ordered to take over Fort Pulaski. The fort was surrendered by "one elderly US sergeant."

The flag the Greens carried throughout the war was donated by LT M. J. Ford to CPT John Foley. One side of the silk standard was white, having the coat of arms of Georgia and 11 gold stars. The other side, which was green, depicted a large Harp of Erin.

The Greens fought courageously during the Civil War under some of the worst conditions ever experienced by soldiers during combat. Their most valiant efforts, however, came when they were called upon to perform rear guard duties for retreating Confederate armies, particularly in the defense of Atlanta against Sherman's superior forces.

In one battle, following the battle of Nashville, in which the South was soundly defeated and began a retreat into Mississippi, a brigade of 1,600 men held off a Federal Army of 10,000 men for eight days. The Greens were in that brigade.

Finally, on 25 April 1865, General Johnson surrendered to Sherman at Greensboro, NC; the officers were allowed to keep their swords and each regiment retained its colors. What was left of the Savannah Regiment marched to Augusta, where it dispersed, and the war was over for the Greens.

The period between the Civil War and World War I were quiet years for the Greens. Although disbanded by military order in 1865, the members continued to meet to talk over old times, reminiscing about their fighting days in Mexico and against Sherman.

During World War I, the "war to end all wars," the Greens, along with the Service Battery of the



The Irish Jasper Greens parading on St. Patrick's Day in Savannah as they do every year.

German Volunteers and A and C Batteries of the Chatham Artillery, served gallantly with the 31st Infantry Division. Through the campaigns in France and Belgium, the Greens, then designated "B Battery," fought with valor.

After World War I, the Jaspers became part of the 30th Division, a Georgia National Guard unit. On 16 September 1940, they were inducted into Federal service and sent to Fort Jackson, SC, for training.

William F. Hennessy of Savannah, who joined the Jaspers in 1938, remembers those pre-war days. Hennessy pointed out that the members of the Greens drilled every Monday night and enlisted personnel were paid one dollar per drill session (\$12 quarterly). "The guns we used were old French 75s, and we would haul them to training sites, like Jackson or Benning, behind ton-and-a-half Dodge trucks. They used horses up until 1935 or 1936 to pull those 75s. We fired at Benning and Jackson in those days (Fort Stewart was not even in existence then). We didn't live fire much as ammo was scarce at that time."

During the period just prior to World War II, the 118th Field Artillery Regiment consisted of six batteries. Five batteries were based in Savannah but Battery A was at Waynesboro. According to Hennessy they had a regimental band and a medical unit, but the organization within the battalions was unusual. The First Battalion consisted of Batteries B, D, and F, while the Second consisted of Batteries A, C, and E. Hennessy stated that when the 118th was mobilized, it "liked to have driven the Army wild!"

Shortly after the Pearl Harbor incident, the War Department created the 230th Field Artillery Battalion on 16 February 1942. Today, this battalion is part of the Georgia National Guard, 48th Infantry Brigade (Mech), the 24th Infantry Division's roundout brigade, and part of the Rapid Deployment Force.

Following the 1942 activation, the battalion participated in Spring Maneuvers in Carolina. Its next move was to Camp Blanding, FL, as a training cadre. As such, recruits streamed in from all but four of the 48 states of the Union.

The 230th spent the next two years in training and maneuvers in most of the "tick camps" of Georgia and Tennessee, winding up at Camp Atterbury in Indiana. The next move, on 1 February 1944, was to the east coast in preparation for embarkation to England and the war in Europe.

The Greens, along with their parent battalion, detrained in a darkened shed on a pier beside the East Boston waterfront. In swirling snow on 11 February 1944, the unit climbed the gangplank of the SS *Argentina*, a peacetime cruise ship, which was to sail the next day. The ship dropped anchor in the Clyde River opposite the town of Gourock on 22 February 1944, and the troops disembarked by ferryboat on the morning of the 25th. They traveled by train to Sussex County in southern England, their first temporary quarters in the Old World.

During the next several months, the 230th underwent intensive training in various localities of southern England. There were numerous inspections by high ranking officers, including "Ike" and Field Marshal Montgomery. Montgomery told the men, "The young Germans are tough, very tough. There's not much you can do with them except kill them."

On the evening of 9 June 1944, the convoy, which included LSTs 367 and 261, pulled out into the English Channel. The 230th was on its way to Omaha Beach the next morning, four days after D-Day.


Dawn found them nearing the coast close to Cherbourg and as the tide turned and started to ebb, LST 367 received orders from the beachmaster to land. As she hit solidly, sliding well up on the sandy bottom, the ramp dropped suddenly and the first howitzer section of the battalion rolled onto the beach. Without stopping, the men and equipment proceeded up the ridge, past minefields and blackened pillboxes and through shell craters and barbed wire. At 1530 hours, the entire 230th was ashore on Omaha Beach.

During the night of the 10th, positions were surveyed and, early morning next morning, CPL Ralph Hyder of Battery A took a German sniper as prisoner. Registration then began, and the first round to be fired on the continent by the battalion was sent on the way, by number, to a section of Battery B, commanded by SGT Ralph Desposito of Savannah. The unit fired its 150,000th round at the Rhine Crossing. After firing approximately 170,873 rounds, the unit fired its last round near Magdeburg, when World War II came to a close.

Between that first and last round, the men of the Irish Jasper Greens went through the stifling heat of summer and the chilling cold of the winter around "The Bulge." They were bombed and shelled by the enemy while clearing the way for our own infantry through towns in France, Belgium, Holland, and Germany. From St. Lo in France to Magdeburg in

Germany, the Greens and their brother units received little respite and suffered many casualties, Bronze Stars were awarded to PVT Edward G. Ciecevich, SGT Ralph A. Desposito, and SSG Eugene A. Gavin; Gavin was also awarded the Purple Heart. The Silver Star went to CPL Herman L. Knight, posthumously.

With few exceptions, the Jaspers have fired a cannon salute on St. Patrick's Day, every year since 1876, when the first salute was fired at Forsyth Park in Savannah. Filled with tradition, the Irish Jasper Greens are to this day serving their country as part of the 230th, the organic artillery of the 48th Brigade, which is the roundout brigade for the 24th Infantry Division at Fort Stewart, GA.

Serving as Executive Officer of C Battery of the First Battalion is 1LT Michael F. Hennessy, the son of William Hennessy who served with the Greens in the 1930s. When asked about the brigade and the readiness of its artillery as part of the Rapid Deployment Force, Michael Hennessy stated, "We are ready. There are no more weekend soldiers. With the level of training we are receiving, we can and will stand in support of the 24th's own artillery." 

Bob E. Goodenough is a public information specialist in the 24th Infantry Division Public Affairs Office, Hunter Army Airfield, GA.

Contracts for new chemical disposal system

Three contracts totaling \$852,273 have been awarded by the Army's Toxic and Hazardous Materials Agency (USATHAMA) for the development of an advanced thermal chemical demilitarization system.

Rockwell International of Canoga Park, CA, has received a \$330,891 contract, while Battelle's Columbus Laboratories, Columbus, OH, received \$261,050 and Midland Ross Corp., Thermal Systems Technical Center, Toledo, OH, got \$260,332.

The 10-month contracts will identify improved methods to incinerate nerve agents GB and VX and mustard blistering agents.

An extensive literature search and industrial survey will be conducted to identify existing and advanced state-of-the-art technology related to thermal destruction of lethal chemical agents and similar hazardous organic compounds.

The thermal systems to be evaluated will include, but will not be limited to, conventional incineration, molten salt, fluidized bed, and other novel thermal processes that have demonstrated a strong potential to provide enhanced process safety and economics.

The contractors will perform a preliminary engineering evaluation of the alternatives identified and recommend processes that might offer the greatest potential of successful development within a 4- to 5-year time frame. (*Army RD&A Magazine*)

With Our Comrades in Arms

NEWS OF OTHER BRANCHES AND SERVICES

Solar array wing tested

A solar array wing (as tall as a 10-story building) is being tested by Lockheed Missiles & Space Company in preparation for a flight experiment onboard the National Aeronautics and Space Administration's Space Shuttle Orbiter in 1984.

The flight experiment is part of an effort to develop technology for using solar arrays to produce large amounts of electrical power from sunlight in space. The additional power could significantly expand space-based mission operations.

The purpose of the tests underway now are to check the extension/retraction system that will deploy the wing from its packaged configuration aboard the Shuttle during the flight.

During launch, the accordion-like array wing, which measures 105 feet long and 13½ feet wide, will be folded in the Shuttle's cargo bay in a package less than four inches thick. Once in orbit, it will be extended to its full length and retracted several times to verify its structural and dynamic characteristics.

A coilable extension mast will provide the mechanism needed to extend, retract, and hold the array in a planar configuration.

Lockheed's solar array departs from the rigid metal structures currently used on long-life

spacecraft. Instead, it is made of a lightweight, flexible plastic called Kapton and contains wraparound contact cells that are welded directly to the array blanket. This printed circuit approach eliminates heavy adhesives and allows greater flexibility during handling and during extension and retraction of the wing.

To minimize costs, the experiment will contain only one wing panel with live solar cells. By contrast, an array with all 84 panels populated with solar cells could convert energy from the sun to produce 12.5 kilowatts of power.

The experimental wing can generate 66 watts per kilogram compared with 20 watts per kilogram in present systems. With current high efficiency cells, up to 75 watts per kilogram are feasible using the same structural concepts.

SAW approved for type classification

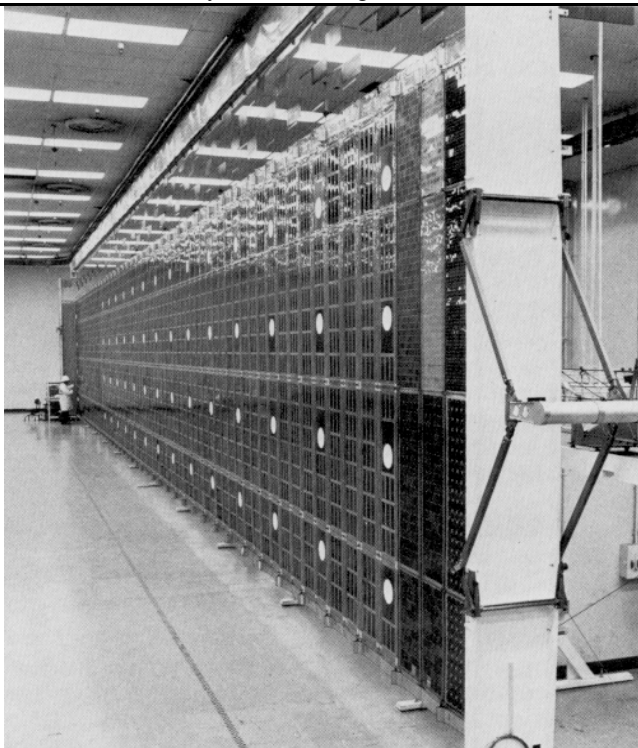
The Office of the Army's Deputy Chief of Staff for Research, Development, and Acquisition (ODCSRDA) has approved type classification of the Squad Automatic Weapon (SAW). This action reportedly represents a major achievement for the US Army Armament Research and Development Command.

The 5.56-mm SAW machinegun will be deployed primarily in infantry fire teams with the Army and US Marine Corps. Its operational need has been recognized since the obsolescence of the 30-caliber Browning automatic rifle which resulted from the adoption of the 7.62-mm M14 rifle.

Unsuccessful attempts have been made to fill this operational void with an automatic fire version of the M14 followed by the 5.56-mm M16A1 rifle with bipod. Some units later adopted the practice of employing the 7.62-mm M60 machinegun at the squad level, but soon recognized that the excessive weight of this weapon resulted in an unacceptable tradeoff with respect to maneuverability.

The SAW was developed under management direction of the SAW Project Officer within ARRADCOM's Fire Control and Small Caliber Weapon Systems Laboratory. It was supported by a Joint Service Operational Requirement (JSOR) indorsed by the US Army, Marine Corps, Air Force, and Coast Guard.

The JSOR describes the need for a one-man portable, lightweight machinegun capable of providing effective suppressive fire to a range of 1,000 meters, commensurate with the projected threat. Based on extensive testing, the SAW demonstrated its capability of effectively satisfying this operational need.



Accordion-like array wing.

The SAW system components, besides the M249 5.56-mm machinegun, included in the type classification action were the M855 5.56-mm ball cartridge; the M865 5.56-mm tracer cartridge, and the M27 5.56-mm metallic belt cartridge link.

The M249 weapon evolved from a competitive evaluation of four candidate systems: the XM106, XM249, XM248, and XM262. The conventional piston-actuated gas system allows for a choice of two power settings, achieved by regulating the bleed of gas entering the cylinder. This feature provides for a constant 750 rounds per minute cyclic rate even under adverse firing conditions.

This 15.6-pound weapon fires from the open bolt position which reduces the likelihood of cook-off in an automatic gun required to operate with a hot barrel. The M249 has a quick change barrel capability which can be achieved within three seconds. It can be both belt fed from a 200-round container or the 30-round magazine used in the M16A1 rifle.

The M855/856 cartridges used in SAW comply with the NATO 5.56-mm Second Caliber Standardization Agreement (STANAG 4172). This STANAG was agreed upon with the NATO countries to assure commonality of ammunition. The SAW type classification puts the US in a lead role with respect to implementation of the STANAG.

The M855 ball cartridge is similar in configuration to that of the M193 used in the M16A1, but offers significant improvements in extended range effectiveness. Likewise, the M856 tracer cartridge uses the same exterior cartridge envelope as the Army's current standard M196 tracer, but extends the daylight-visible range by as much as 50 percent.

At the conclusion of the competitive evaluation, a special in-process review was held on 28 May 1980, recommending the XM249 weapon and XM855/856 ammunition for accelerated development to ready the system for FY82 procurement.

The SAW Project Office devised and executed this program which included system redesign, procurement, test and evaluation, and adherence to and compliance with all DA regulations prerequisite to a development in-process review.

The remaining research, development, test and evaluation tasks included a continuation of the integrated logistics support program along with finishing development of supporting equipment. A blank firing attachment will be developed for training and integration with the Multiple Integrated Laser Engagement System, a training device.

Newly designed, load-carrying pouches have been extensively tested and technical data packages will be developed to support their type classification and procurement. These pouches, which have been designed to attach to the standard load-carrying belt, will provide the machinegunner with the capability of carrying 600 rounds of M855/856 ammunition during the assault. A weapons storage rack development program is being planned to assure the security of SAW weapons when fielded.

The advanced procurement plan has been submitted to Department of the Army Headquarters, and the FY82/83 procurement scopes of work have been developed. The current 5-year (FY82-86) procurement plan includes the purchase of approximately 26,000 SAW weapons for the Army and 9,000 for the Marine Corps. These quantities are expected to escalate once the non-infantry units and other joint services finalize their requirements. (*Army RD&A Magazine*)

Hawk decoy tested

An inflatable Hawk missile decoy was recently tested at the Electronic Proving Ground (EPG), Yuma, AZ, to determine its effectiveness in confusing the aerial reconnaissance and image interpretation efforts of hostile forces.

The decoy concept was developed because of Hawk's vulnerability to detection and attack in the field. It was hoped that, by using false targets, the probability of strikes against actual missile systems would be somewhat reduced.

The inflatable decoy idea is not new. The US Army became interested after a firm in Augsburg, West Germany, developed a Hawk decoy for the German army. An air defense unit at Fort Bliss, TX, also conducted feasibility studies on the devices as early as 1977.

During the tests at Yuma, conducted jointly by EPG and Marines from Battery A, 2d Light Antiaircraft Missile Battalion, a real Hawk system and a decoy were placed in the field in an attempt to fool image interpreters using photographs, radar, and infrared surveillance. According to Lowell Stewart, test officer for the project, "the results showed that the decoy is fairly effective, lightweight, and mobile."



Is it the "Real McCoy"? At a distance the inflatable Hawk missile system decoy passes surveillance test as the real thing.



The AN/MPQ-103A TEAMPACK mounted on the tracked vehicle.

TEAMPACK system completed

Emerson Electric Company has completed the first production unit of the US Army AN/MSQ-103A TEAMPACK radar monitoring system. The advanced system, which locates and identifies enemy ground based radars on the battlefield, was developed by Emerson's Electronics and Space Division under a contract awarded by the US Army Electronics Warfare Laboratories, Fort Monmouth, NJ.

The TEAMPACK system is housed in a state-of-the-art ballistically protected shelter and is then mounted on an XM1015 tracked vehicle. The system can also be mounted on an M35 utility truck, light armored vehicle, jeep, 5/4-ton truck, and other types of combat vehicles.

Surveillance, air defense, and countermortar/battery ground based radars are all detectable by TEAMPACK. Improvements over earlier systems of its type include improved reliability, better crew protection, and system growth features which will enable it to be used well into the future.

High mobility vehicle models undergo testing

Testing was recently begun at Aberdeen Proving Ground, MD, on three candidate models of the proposed High Mobility Multipurpose Wheeled Vehicle (HMMWV).

The nearly 5-month long series of tests will determine which of the candidate manufacturers will be awarded the contract to produce the initial 53,000 vehicles intended to replace 1/4- to 5/4-ton military vehicles.

"The Hummer," as the new vehicle is called by APG's Materiel Testing Directorate engineers, is an outgrowth of two earlier programs, designed to find replacements for the M151A2 jeep and the M561 Gama Goat. Specifications for the new vehicle include the following:

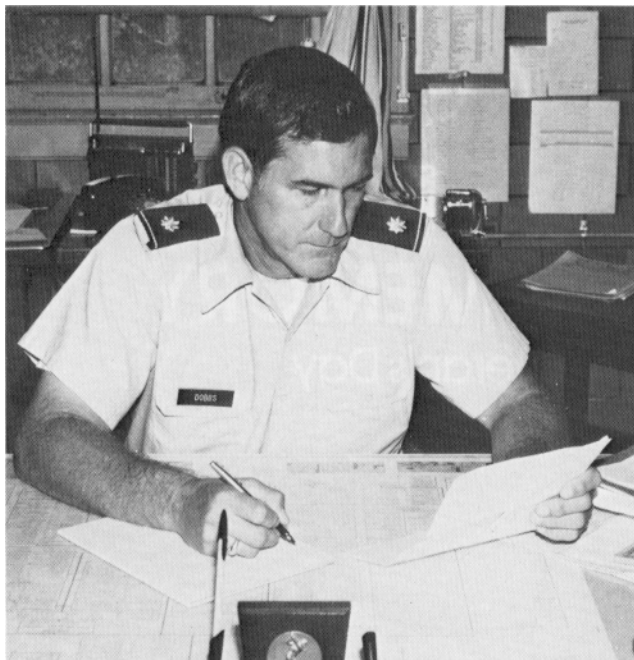
- A common chassis is needed upon which several different bodies could be built, such as troop carrier/utility vehicle, ambulance, and weapons carrier.
- The engine must be a diesel with at least 140 horsepower, both for increased power to handle projected heavier loads and to increase its off-road mobility.
- The vehicle must have power steering, automatic transmission, and run-flat tires capable of moving the vehicle 30 miles at 30 miles per hour (mph) over a paved road while deflated.
- The vehicle must have a 300-mile cruising range and be able to accelerate from zero to 30 mph in eight seconds or less.
- It must also be air transportable by helicopter, and many of the parts must be commercially produced and in use on other off-road type vehicles. On some test models, up to three-quarters of the components came "off the shelf."

MTD has received 21 of the 33 existing prototype models and has begun a dual test. Six of the vehicles have been designated for performance and safety certification, and 12 have been assigned to reliability, availability, maintainability, and durability testing. Three have been assigned to Yuma Proving Ground, AZ, for desert testing.

While at Aberdeen Proving Ground, the vehicle will be put through a rugged test program. Each will be driven about 20,000 miles and tested for speed; acceleration; performance on horizontal (side) slopes, grades, and inclines; load distribution; braking; traction; steering and handling around obstacles; fuel economy; low and high water fording; cold; and human factors. (*Army RD&A Magazine*)

Fragments

FROM THE EDITOR



With publication of this last issue for 1982, I also close out what has been one of the most enjoyable and personally satisfying assignments of my Army career. Having served as your editor through 20 previous editions, I leave with a deep sense of gratitude, for whatever success I might have enjoyed can be directly attributed to the continued and outstanding support of our readership and the *Journal* staff.

Reflecting on the past three and a half years, I also leave with two personal, although unrelated concerns. First is the all too infrequent participation of our soldiers and noncommissioned officers in the magazine and, second, the continued cuts in funding for Army periodicals.

Soldier and noncommissioned officer subscribers

Clearly, the majority of material published in each *Journal* is authored by the officer corps. This is not a result of an editorial decision but is an accurate reflection of what is received. Although the solution to this dilemma is obvious, it is also difficult to reach since all an editor can do is encourage enlisted personnel to submit material and assist them in final publication. Here then, as a parting shot, I again urge our junior and senior enlisted ranks to take part in *your* professional journal. Whether it be a letter to the editor

or an article, the *Journal* needs your support.

Cuts in funding

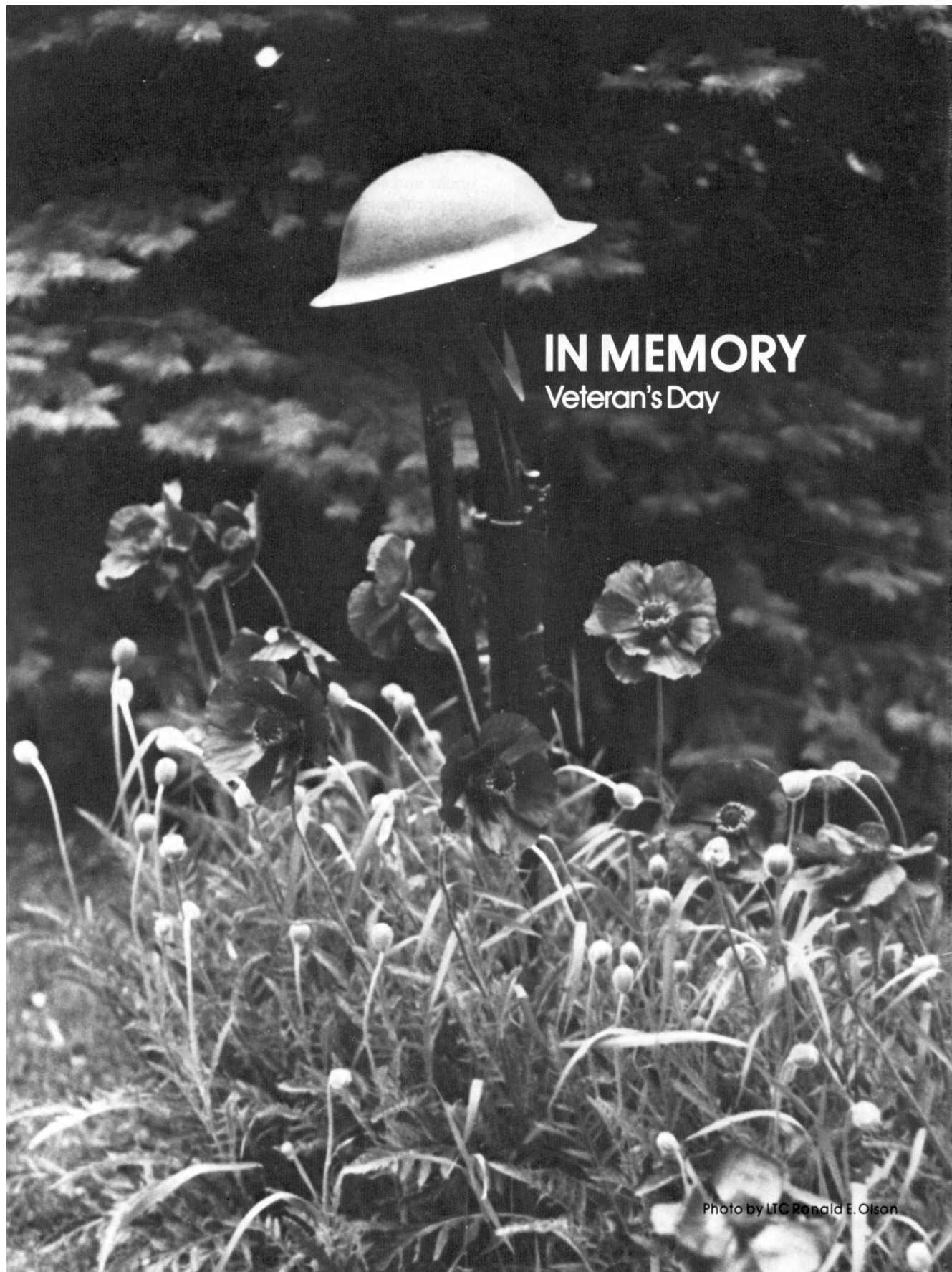
As our readers may recall following last year's budget cut of nearly \$16,000, I mentioned that "the writing was on the wall" insofar as other probable future reductions in operating costs. Although this year's Periodical Review Board's directives were less severe, we have reached the point where quality and service will be affected should the *Journal* be required to make additional cuts.

For example, I have thus far reduced our free distribution by 5,000 copies with another 1,200 to be cut in 1983. The *Journal* was also *reduced* from 64 to 56 pages.

The current budget will necessitate less use of color and duotones and perhaps a lesser grade of paper. Further reduction in the number of pages may also be required, making it clear that the overall quality and underlying purpose of the magazine may be affected. Although I support any effort to eliminate unnecessary spending, my obvious concern is that the *Journal* as well as other Army periodicals and branch magazines will eventually be unable to professionally carry out their important service in the Army's Public Affairs and Command Information Programs. Should that happen, the next step would be certain elimination.

Conclusion

In closing, I again want to express my sincere thanks and appreciation to our readership, the *Journal* staff, and all the others who have made my editorship so enjoyable. Your new editor, MAJ Terry Freeman will be taking the chair with the January-February 1983 issue and I certainly wish him the best in all his efforts. ☒



IN MEMORY
Veteran's Day

Photo by LTC Ronald E. Olson