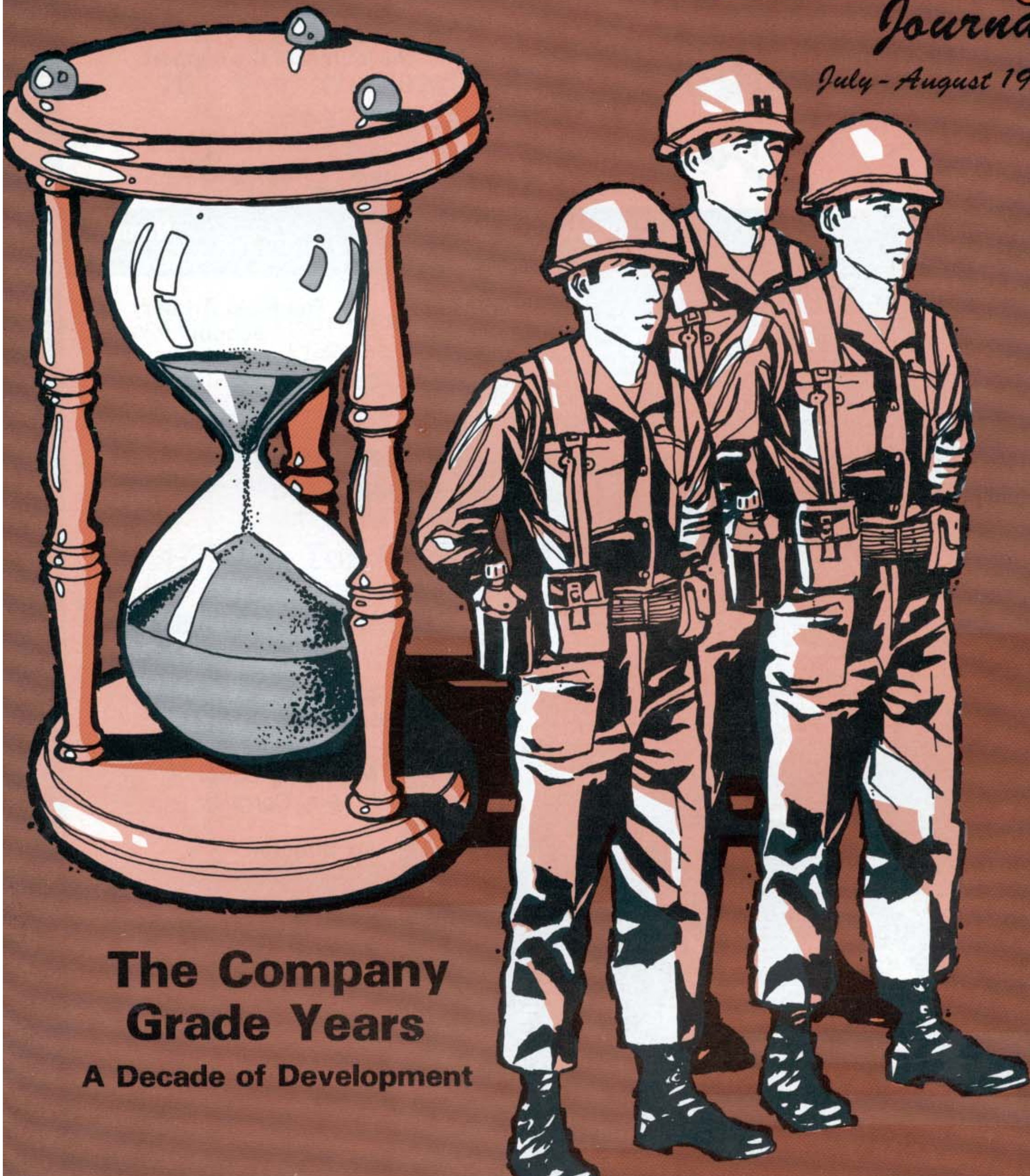
Field Artillery Journal

July - August 1979



The Company Grade Years

A Decade of Development

the journal of fire support

Volume 47 **July-August 1979** **Number 4**

The *Field Artillery Journal* is published bimonthly at the US Army Field Artillery School for the same purpose stated in the first *Field Artillery Journal* in 1911:

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

Funds for the printing of the publication were approved by the Department of the Army, 23 February 1979.

All articles and information submitted are subject to edit by the *Journal* staff; footnotes and bibliographies may be deleted from text due to limitation of space.

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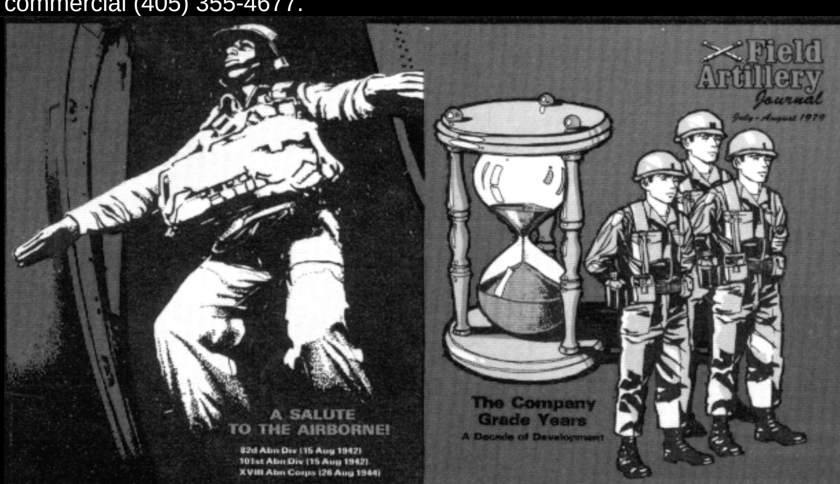

Front and back covers designed by Bob Coleman.

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Articles

Features

On The Move. . .

by MG Jack N. Merritt

In the March-April issue of the *Journal*, I discussed Division '86 and commented on our battlefield interdiction responsibilities in the last issue. In the context of these requirements, therefore, this seems to be a fitting time to discuss some of the technological challenges ("opportunities" may be a better word) we face in developing the Field Artillery system required to match the fast-moving, lethal battlefield of the future.

As we all know, the nature of our business in the Field Artillery has placed us in the vanguard of the Army's effort to apply computer technology in support of our battlefield requirements. We have finally achieved a real computerized command and control system with TACFIRE in the 1st Cavalry Division at Fort Hood and the 1-17th FA at Fort Sill.

Incredible as it may seem, however, the requirements documents for TACFIRE's successor are now being prepared—scarcely a year after TACFIRE's OT III at Fort Hood. Like it or not, the Field Artillery and the fire support community (and thence the Army) stand to win big if we can harness the growth and potential of current and expected advances in automated data processing.

Fortunately (or unfortunately as the case may be), this is the fastest moving area of technology. Daily we learn about smaller and smaller processors doing bigger jobs faster.

Our charge is to think through the Field Artillery's requirements for a battlefield 10 years in the future and to design the hardware and doctrine required for that time.

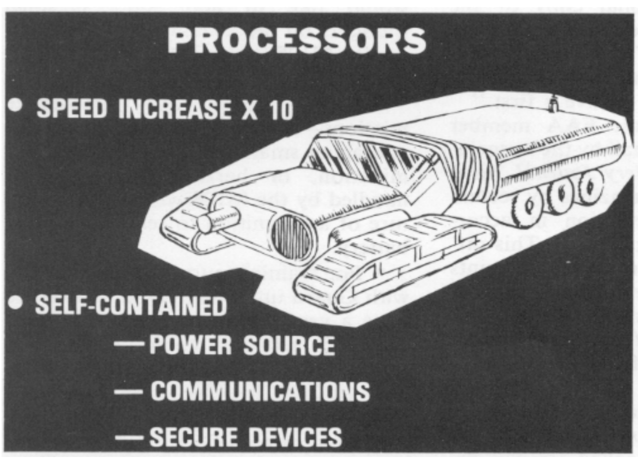
We are presented on the one hand with a number of technological possibilities. First of all, processors are cheap and getting cheaper. No one I know yet dares to predict the limit of their proliferation. One manifestation of this is that work formerly done by mainframes can now be done on a single microchip—the "miracle chip." Light pens and computer graphics are already commercially available, and memory technology is being discovered almost faster than the trade magazines can report it. Bubble memories and superconductors are just around the corner. Fiber optics promise to pass digital flow at unheard-of rates to laser printers capable of 13,000 lines per minute.

Many of these hardware breakthroughs, though, are barely understood even by the companies who made them. In the field of computer graphics, for instance, even the computer companies have yet to take full advantage of the possibilities that exist. They know they're onto something good, but they don't quite know how to make it pay.

Now, we *think* we have a reasonable grip on where the shortfalls lie within the Field Artillery, although we are less sure of their magnitude. We know that in a mid-intensity European scenario there are more missions and messages to be processed than even TACFIRE with its AN/GYK-12 processor can handle. The TACFIRE processor is reasonably close to the state of the art but still handles jobs one at a time. We are not satisfied with the resultant queues and are working on techniques to reduce them.

We know we need more processing speed and suspect it needs to be an order-of-magnitude increase. What we can do now in microseconds we need to do in nanoseconds. Whether this can be achieved through an increase in speed or by proliferating processors and distributing them about the battlefield is not important. What is important is to increase capability.

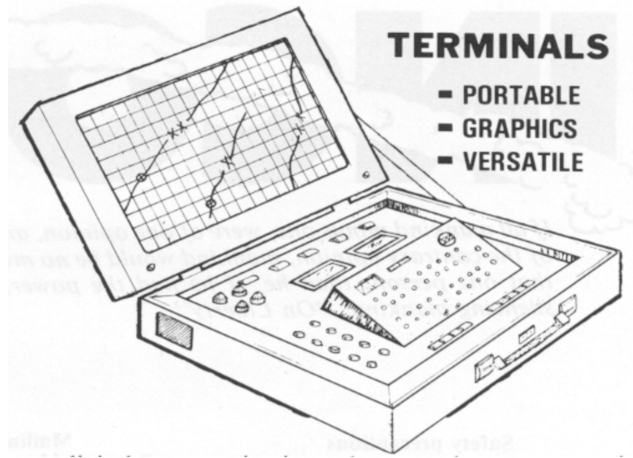
Also with respect to the processor, we feel that a significant reduction in size and power consumption must be achieved to free us from dependence on big, soft, wheeled shelters and external generators. The div arty and corps TACFIRE sets, for example, now reside in a two-van configuration, each requiring power from an external generator. What we would like is a small but powerful processor capable of living and working inside a highly mobile armored hull with the resultant gains in survivability.



Along the same lines of utility, we want the processor to have self-contained communications and secure devices to defoliate the forest of cables currently required.

Next, our current family of input-output terminals require the user to "come to them." For instance, the brigade fire support officer cannot take his variable-format message entry device into the brigade TOC. If we expect him to do his job right, he ought to have the kind of terminal he can carry with him into the TOC or aboard the commander's helicopter. The terminals we require probably need not be smaller than briefcase size, but they must be free of umbilical wires and have graphics capability.

In the same vein, we have run up against many of the data base diseases which afflict civilian managers. In a BETA-TOS-TACFIRE world, commanders will have more information lodged in their processors than they can possibly ingest. Also they will not be able to monitor



digital communications the way they once monitored voice nets. Further, the parameters they enter into the computer before the battle is joined must be most carefully constructed to insure that their effects in terms of the way the battle is fought are those which were intended.

For commanders, then, we need the same kind of portable, high technology graphics terminals programmed to synthesize the thousands of raw facts about the battlefield into a concise picture the commander can immediately grasp. Additionally, we need to sort out all the parameter settings a commander requires to optimize his fire support network.

So, just as the active defense and our newly defined task of battlefield interdiction have shaped our thinking about the Field Artillery system, so our success at exploiting the linkage between achieveable processor and terminal technology on the battlefield will shape an advanced tactical data system. Such a system will have great impact on how the Field Artillery conducts its business well into the 21st Century.

TACFIRE, in essence, has automated most of our existing manual procedures. That's the way it was designed, developed, and built. With the Son of TACFIRE, we have the opportunity to devise a command and control device which can eliminate or bypass many steps in our process which were time-consuming in manual operations. Further, in the current world of limited personnel spaces, we must go after a significant reduction in the numbers of soldiers required to operate and maintain the system.

For the next Field Artillery tactical data system, then, our major efforts will be to first ride the wind of computer technology in securing great gains in processing speed, manageable size, and power needs. Our terminal gear must fit the demands of those who use it, and the entire system must achieve both economy in personnel and efficiency in operation.

Probably most important is the charge to provide both artillery and force commanders the information they require and to furnish them the tools needed to maximize fire support for the combined arms team.

INCOMING

letters to the editor

If all mankind minus one, were of one opinion, and only one person were of the contrary opinion, mankind would be no more justified in silencing that one person, than he, if he had the power, would be justified in silencing mankind.
"On Liberty"

Safety precautions

Even though I have been on recruiting duty the past four years with the MIARNG, I read your magazine religiously. I was a Redleg for six years with an M110 unit, so the articles on the M198 have been interesting to me, especially the article, "We've Got 30" (May-June 1979 *FA Journal*).

The "extraordinary safety precautions" required while firing the M203 charge seem to be extreme and might be a luxury that cannot be afforded in combat situations.

With the advent of the new high power charges for the M198 and M110A1&2, further development of crew protection from blast and noise will be necessary, so the crew's ability to provide timely and accurate fire will not be hampered.

Nathaniel U. Higginbotham
SFC, AG
MIARNG
Detroit, MI

Correction

I enjoyed very much Janice McKenney's article "Whence the 105-mm Howitzer?" (May-June 1979 *FA Journal*). The picture on page 41 shows a 75-mm M1897 gun on the modern M2A3 carriage, not a 105-mm howitzer as the caption implies. This 75 has rubber tires for high speed movement and split trails for higher elevation and wider traverse of the piece.

Peter Frandsen
MILITARY JOURNAL

You are absolutely right and thank you for pointing out our error—Ed.

Mailing Complaints

Recently I have received several letters and readership surveys from members of the Field Artillery Association (FAA) indicating dissatisfaction with current mailing procedures. It seems many are receiving their personal copy of the *Journal* later than the magazine arrives at our field units. The common complaint is, "I'm paying for the *Journal* and therefore should receive it first."

At the present time FAA member copies are sent bulk mail by the Association. The *Field Artillery Journal*, however, forwards its magazines by second class controlled circulation in accordance with Army regulations. This difference in mailing procedure accounts for much of the delay problem, particularly for those FAA members with APO addresses; e.g., *Field Artillery Journal* circulation is flown from the stateside APO to the overseas APO, while FAA copies must go by boat.

The Association *is not authorized* use of second class controlled circulation, and high costs which would be incurred by first class mailing preclude switch to this faster service.

There is however some hope in sight.

The Lawton Post Office is assisting FAA to streamline its current mailing procedures, to include handling, assembly, and distribution. According to Post Office officials, FAA members should see marked improvement by the September-October issue of the *Journal*.

What is important is we are aware of the problem and are trying to do something to correct it.—Ed.

M108 for Guard units?

I always enjoy the arrival of your publication. We in the Guard would not be sure of hearing about any new developments in our field if it were not available in your pages.

As I read the May-June 1979 issue, I was impressed with Captain Altersitz's article on "Defending the Battery" and would like to add some personal thoughts on the advantage of augmenting the M108 to the TOE of 155-mm SP units.

- Some small and immediate missions—such as dispersing and discouraging small groups, providing illumination, or harrassment—could be handled by the M108 with less expenditure of ammunition to relieve the main battery.
- For training purposes, particularly with Guard units that can only live-fire once a year due to budget restrictions, the 155 sections could be rotated through the 105, thus giving FDC, FOs, and gunners live-fire experience at a great savings.
- Even though GFT settings are not valid or transferable between calibers and charges, a field expedient procedure could be developed to provide guidelines for corrections to allow the 105 registrations to assist in updating a 155 GFT setting. At least it might be worth looking into.
- Since the vehicle is perfectly matched to the 155-mm M109, it could stay with the convoy and be serviced by maintenance facilities already at the battery.

If somewhere there are surplus M108s that have not been converted and some bunkers full of 105 ammo, let us redeploy them. If not, it may be worthwhile to consider rebuilding this useful weapon.

Leland Lay
SSG, NVARNG
Carson City, NV

Wear and tear on M110A1 track pads

I am a member of an M110A1 8-inch SP howitzer battalion in the Army National Guard. We have a question that I hope you can answer. Our field training site is 18 miles from our armory where our howitzers are stored. Can you tell me approximately how many miles we can expect from our track pads when they are being driven over hard surface roads? If there is no life expectancy for track pads on hard surface roads, is there a general rule of thumb?

William J. Burleigh
CPT, FA
Asst Adjutant, 1-181st FA
TNARNG

The track pad life for the M110A1 SP howitzer has not as yet been determined. The expected life of the pad, however long, is mainly contingent on the driving surface and the manner in which the vehicle is driven.

In the near future the US Army Tank Automotive Readiness Command (TARCOM) will publish an article in ***PS Magazine*** *which will list some of the ways in which tank/track pad life can be extended. Some tips are:*

- *Slow down for turns.*
- *Stop gradually.*
- *Accelerate slowly.*

As with any complex piece of machinery, care and common sense will extend its service life.—Ed.

The MOS test is back

Disguised as a Skill Qualification Test, the MOS test is back. The SQTs have gained acceptance with reasonable success because a basic premise, which in reality may be false, was widely publicized. The premise is that important differences between MOS tests used since the 1950s and SQTs are (1) what is tested, and (2) how the results are used. It is easy to show that the written component of the SQT contains questions which are not relevant to the duty a soldier is performing. For example, the M110A1 howitzer does not fire chemical, illuminating, or smoke missions. The written component for MOS 13E, Fire Direction Specialist in an 8-inch battalion, however, contains tasks which pertain to those shells.

The SQT is designed to support the "come as you are" concept. Commanders are expected to know whether soldiers can perform critically important jobs under combat conditions. An M110A1 battalion is not authorized the Gama Goat or the 8-ton truck. Yet the written component of the SQT for MOS 63B, Wheeled Vehicle Mechanic, contains tasks which measure skills on these vehicles. If a soldier is tested on all tasks—those which he might be expected to perform if transferred to another type unit, as well as those required by the position he currently holds—then which tasks are *really* critical? If all tasks are assigned first priority, then we really have not accomplished task prioritization.

An honest evaluation of the current SQT program is that we really have the old MOS test with a hands-on component and a performance certification component added to it. The SQT is purportedly tracked. In reality, only the hands-on component is tracked!

The following are recommendations as alternatives to the present written component program (listed in order of desirability).

- Track the written component. Allow decision-makers in the unit's chain of command (05 or above) to omit items from the written components as is presently done in the hands-on component.
- Publish the written component as a reasonably complete task listing from which the commander may choose tasks which are appropriate to the soldier's current position.
- Eliminate the written component.

The SQT program is clearly more useful than was the MOS test program. In the hands-on component, we focus on performance of tasks critical to the soldier's position. Can we afford not to do this in the written component? If we do not, the price will be demoralized soldiers and unreliable results. On the other hand, if we recognize the hazards in the current written component program and modify the program, we can more accurately evaluate a soldier's ability to perform critical tasks.

Harold J. Sykora
LTC, FA
147th FA Brigade (SDNG)
Pierre, SD

Certainly the design of the 1978 SQT was not perfect, but to compare it with the old MOS test is unjustified. You're right that the 1978 SQT written component was not tracked for the 13E. It was based on the 155-mm M109A1 howitzer, as is most instruction at the School. The decision was made that, for the Field Artillery's first year in the SQT business, the School would go with one track for 13E, using more than one track in subsequent years as more was learned about test design. The 1980 SQT for 13E will be tracked and should not contain the faults you have identified.

The 63-series SQTs are not the FA School's responsibility, so I will not comment on them.

Your comment that the current written component is little more than a repackaged MOS test is overstating the case. All SQT written components are built upon an analysis of the job. Each item is tied directly to a task that is critical to mission accomplishment or survivability, and each written item is as performance-oriented as possible. The old MOS test measured knowledge, not performance, and favored those soldiers with good reading skills. It was designed primarily for use by personnel managers rather than by trainers. As the test was used to rank-order soldiers for personnel management purposes, it was a common practice to throw out the previous year's questions that everyone got right because these questions failed to discriminate between soldiers taking the test.

The 1978 13E SQT was difficult partly because what the 13E needs to know and be able to do is difficult. An in-depth review of the current policies governing the design of SQTs is underway. As part of the review, Fort Sill is conducting a pilot program to determine the desirability and feasibility of putting SQT items in each Soldier's Manual so that the soldier can be exposed to valid test items during on-the-job training.—Ed.

We shot more

I want to respond to your challenge below the 87th Armored Field Artillery Battalion Association's "Reunion" notice (March-April 1979 *Journal* in which the 87th claimed the record for the most artillery rounds fired by a battalion in Europe during World War II—191,762 rounds.

As recorded in the inclosed history of the 93d Armored Field Artillery Battalion, the men of our battalion fired 235,855 rounds of 105-mm ammunition.

Leif C. Reinertsen
COL (Ret), FA
Brooklyn, NY

I knew that claim wouldn't stand long. Does anyone have proof this his battalion fired more than the 93d?—Ed.

Communicator comments

I am not an artilleryman, but my last two and a half years as communications officer with the 6th Battalion, 10th Field Artillery, qualify me to comment on certain articles in the March-April 1979 issue of the *Journal*.

On page 30 was an update on the hand-held calculator. Page 41 had a short piece regarding a new power source for the calculators. (I submitted a power source idea through the suggestion program which was not accepted.)

The first article indicated that the question of a power source had not been resolved but that the three options were a 24- to 115-volt inverter, an AC generator, or a commercial 12-volt adapter.

The second item announced an adapter made by TASO to power the calculator with BA30 batteries in a theodolite power supply. Based on the age and scarcity of BA30 batteries here in Europe, the second idea leaves much to be desired.

The generator use is totally ridiculous considering the power needed and the problems inherent in military generators. The inverter also seems a mighty big hammer for a small nail. The 12-volt adapter is the most reasonable, but only if the unit has M880 series vehicles.

My idea was a variation of the adapter concept. For the last few years solid state voltage regulators (LM 309K and LM 320-SK) have been available in a single unit form much like a transistor. All that is needed to use the device is a power source, a switch, and a power lead to the calculator. These devices can produce a 5-volt output from a 5 to 35-volt input at one ampere, enough for four calculators. I have built two such units and they have worked very well using the 24-volt power from a military vehicle. My devices plug into the charger socket of the survey section's calculators. A similar device could be built for less than $5.00 each and used with the Fort Sill designed adapter to take advantage of the work angle it gives the calculator.

The third article I take exception to is the one describing the Battery Computer System. While FADAC is way beyond its useful life and I have my doubts about TACFIRE because of its reliance on questionable communications channels, I cannot accept the BCS as presented. It is too bulky and the use of volatile memory is a tremendous oversight. But the most unlikely component is the Gun Display Unit (GDU). After watching what a gun crew can do to a VIC-1 intercom system and CVC helmets, I cannot believe that the GDU would last through more than one FTX. Another problem not being addressed is repair. My unit has to take its FADACs 40 miles to the repair facility. How will we ever keep TACFIRE, BCS, and the other fire direction systems operational when my battalion has not seen a radio repairman in two years? I wholeheartedly agree that we need to upgrade our fire systems, but let's take a good look at what we buy so we can avoid a repeat of the great M561 Gama Goat mess.

George R. Mells
CPT, Signal Corps
6th Bn, 10th FA
APO New York

Thank you for your letter. The ideas from other branches often help us see the forest and not just the trees.

The power adapter with the theodolite power supply as a power source was developed as an immediate solution to the problem of power failure with the Texas Instruments rechargeable battery. All survey sections have the theodolite power supply issued with their instruments. The calculator was tested extensively and consistently achieved the results described in the item. Since surveyors do not compute continuously, those operational times can be projected into several weeks of routine operations.

The Counterfire Department believes your thoughts on a portable regulator are worthy of further study as a follow-on action. The calculator being developed for gunnery will need such a device since FDC sections are not issued theodolite power sources. The handheld calculator project officer will consider your comments in his research.

As to your comments on FADAC, TACFIRE, and the BCS, you say you doubt TACFIRE's value because of its reliance on questionable communications. TACFIRE uses standard communications, so it is no more vulnerable than the rest of the Army. TACFIRE neither enhances nor degrades that system, but due to its transmission in bursts of data, user survivability should be improved over current fire control and fire direction communications.

You say BCS is too bulky. FADAC is 90 pounds heavier and 1,800 cubic inches larger than BCS.

As to the volatility of the BCS memory, there are two internal batteries that provide sufficient power to retain the memory if primary power is lost. BCS also has an integral magnetic tape unit for computer program loading and storing dynamic data which is a significant advantage over the "read only" paper tape of FADAC.

While the Gun Display Units will require reasonable care as would any electrical device, BCS components (including the GDU) have undergone contractor and unit testing for ruggedness.

Comparing the maintainability of TACFIRE (BCS) and FADAC is difficult since part of the "TACFIRE system" includes organizational changes to place the required maintenance personnel in the unit. Trial runs of TACFIRE have indicated that 90 percent of breakdowns can be repaired by the operator within 30 minutes. The other 10 percent can be repaired by direct support mechanics in the battalion or brigade area.—Ed.

Battalion staff FDO

The general concept of organization for the Field Artillery is one of "a supervisor — for the supervisor — for the supervisor." Very simply put, we have a superior position for almost every TOE officer slot in an artillery battery or battalion. The rationale for this concept is a very sound one, which has proved effective from colonial times. As an officer matures and moves through the battery level positions and duties, he acquires a certain amount of book and practical knowledge, experience, and good old "Yankee ingenuity." These valuable assets are then used to improve weak systems and perpetuate the strong.

To a large extent this principle is followed in Field Artillery organizational structure; however, a glaring void is apparent. The firing elements, our primary reason for existing, have no direct battalion or higher staff officer supervision. The absence of a battalion firing battery officer is a severe shortcoming in the Artillery organizational concept.

We can look at this shortcoming from two viewpoints — training and tactical. Artillery training has become very sophisticated. We must now orient ourselves to ARTEP training, section level evaluations, section chief tests, gunners' tests, SQTs, etc. It is apparent that we are striving for uniformity of high performance standards and results. To achieve the results desired, it is imperative that a staff officer be responsible for coordinating the efforts of the various elements within a battalion.

Our primary tactical mission is to shoot, and to do this effectively requires a *coordinated* effort, to include communication, survey, the firing battery, and the fire direction center. The cannon firing battery executive officer has no immediate staff level officer to turn to for pertinent firing battery information, suggestions, and/or recommendations. A battalion firing battery battery officer who has had experience as a battery fire direction officer, executive officer, and battery commander could add invaluably to the effectiveness of the battalion. He would be experienced enough to be able to standardize procedures, evaluate new procedures, make recommendations to the battalion commander regarding pertinent firing battery information, serve as a training officer liaison between battalion and div arty, and also act as the battalion firing battery evaluator to determine unit readiness. This officer would also be in a position to coordinate the various staff functions as they directly apply to the firing battery.

The Artillery battalion needs a battalion staff firing battery officer. This addition to our TOE will prove to be the restoration of the most vital link between the functioning of the firing battery and the mission of the Artillery in a combat operation.

Ronald L. Chiste
CPT, FA
S2, 4-112th FA
NJARNG

Review of paragraph 4-7, FM 101-5, 19 July 1972, indicates the duties and functions you propose to be carried out by a "battalion firing battery officer" closely approximate the inherent responsibilities of the battalion S3 or assistant S3. However, the battery commander should be first in line for any information, suggestions, or recommendations from his executive officer. Supervision of firing elements is his responsibility.

Current and projected shortages of field artillery company grade officers may preclude the traditional career progression of battery and battalion officers. "The supervisor, for the supervisor, for the supervisor" may soon be wearing the same hat.—Ed.

Exercising the staff

During our recent battery ARTEPs, we finally solved a training problem that has existed in every unit to which I have been assigned — providing realistic training for the battalion staff while the batteries are being evaluated. Normally the staff is used to evaluate, so they receive minimal training in their normal functions.

The solution was proposed by my operations sergeant, SFC Thomas Carr, who conceived the "control cell" concept. The control cell, consisting of our Liaison Section, augmented with an RTO, wrote and directed a scenario based on our ARTEP. The scenario ran for an eight-day period and emphasized 24-hour operations to include all battery and battalion level nuclear tasks.

The control cell represented a direct support battalion which the 1st Battalion, 18th Field Artillery, was reinforcing. As a result of briefings by the control cell, the battalion tactical operations center had to publish two operations orders with accompanying overlays. A copy of the scenario was given to a forward observer team provided by the 1st Battalion, 10th Field Artillery, so they could initiate the fire missions to the battalion FDC. The battalion FDC then processed and assigned the missions to the appropriate firing units.

The battalion trains element was also challenged to resupply POL, ammunition, and rations, as well as medical and maintenance support beyond the batteries' capabilities.

The staff was still required to act as evaluators, but the eight-day scenario allowed the staff to conduct two separate evaluations of each battery as well as to perform their specific missions.

The control cell concept provided excellent training for this battalion during the battery ARTEPs. This concept could be adapted easily to brigade level units as they evaluate batteries and battalions. It provides the maximum training for the shrinking training dollar.

David W. Wirtz
MAJ, FA
APO NY

Historical indexes to the *Journal*

Readers can now obtain copies of three indexes to past issues of the *Journal* and *Field Artileryman (Artillery Trends)*. Indexes in the Artillery trilogy series are:

1) "Readers Guide to the Field Artillery Journal," January 1911-December 1939. Cost $5.25. Order number ADA064879.

2) "Index to the Field Artilleryman (Artillery Trends)," January 1957-October 1972. Cost $5.25. Order number ADA059414.

3) "Index to the Field Artillery Journal," January 1940-December 1976. Cost $7.25. Order number ADA053085.

Request for these references along with payment should be sent to:

Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

Lester L. Miller
Supervisory Librarian
Morris Swett Library
Fort Sill, OK

Reunions

The reunion of the 284th Field Artillery Battalion, World War II members will be held 3-5 July at the Holiday Inn, Quincy, IL. Contact Ronni S. Polson, 22678 W. Loon Lake Blvd., Antioch, IL 60002.

The 62d Armored Field Artillery Association reunion will be held 19-21 July at the Southgate Inn, Oklahoma City, OK. Contact John R. Howerton, 9988 Live Oak, Fontana, CA 92335.

The 285th Field Artillery Observation Battalion will hold a reunion 20-22 July at the Quality Inn, Carlisle, PA. Contact Charles A. Hammer, 767 Pearl Avenue, Manheim, PA 17545.

Members of the Second Battalion, 77th Field Artillery and 631st Field Artillery will meet 27-29 July at the Holiday Inn in Corsicana, TX. Contact Jim Collins, 915 N. 21½ St., Corsicana, TX 75110.

The 7th Field Artillery Association will hold its twelfth annual reunion 21-22 September at the Howard Johnson Motel in Windsor Locks, CT. Contact Wladyslaw Dudek, 11 Elan Street, Enfield, CT 06082.

The 790th Field Artillery Battalion will hold a reunion in Orlando, FL, 6-8 October. Contact C. C. Carraruro, I Hydraulion Avenue, Bristol, RI 02809.

The 126th and 173d Field Artillery battalions will meet 13 October at the Holiday Inn, in Eau Claire, WI. Contact Edward Kloth, Box 188, Medford, WI 54451 or call 715-748-4843.

The company grade years–A decade of development

by LTC Leslie E. Beavers and MAJ Glen D. Skirvin

These personal views of the Chief, Field Artillery Branch, Company Grade Combat Arms Division, MILPERCEN, and the Captain's Overseas Career Manager expand upon the Professional Development Objectives presented in "Career Patterns" in the January-February 1979 ***FA Journal****.—Ed.*

The article on career patterns for company grade FA officers presented the impact on assignments and career planning caused by the captain shortage. Because of the shortage, there have been changes in tour equity, turn around time to next overseas tour, and average troop/command time for FA officers. In this article, we will examine the causes of the shortages, the distribution of FA officers, and the professional development philosophy for company grade officers.

The officer shortage

Our current company grade officer shortage stems from actions taken to draw down the total officer structure after the Vietnam War. From FY 66 through FY 70, the size of the officer corps was expanded rapidly to meet the demands in Southeast Asia, in addition to sustaining our NATO forces in Europe and the CONUS. Limiting the Vietnam tours to 12 months required additional officers to expand turn around time between overseas tours. Consequently, the commissioned officer sources—ROTC and OCS—dramatically increased their output to meet the demand for additional officer accessions. During 1968, we accessed over 31,000 officers; in 1969, accessions totaled over 24,000 officers—pointing out the tremendous demands for company grade officers during the Vietnam buildup. Another factor entered the officer expansion—promotions. To meet the grade structures required during the Vietnam War, time in grade/time in service requirements were considerably reduced—two years in service for captains and six to eight years in service for majors. At the height of the Vietnam War (1970) over 148,000 OPMD (Officer Personnel Management Directorate) managed officers were on active duty (less AMMED, JAGC, and Chaplain Corps).

With policy changes triggered by President Nixon, our country began the drawdown from Vietnam through phased troop withdrawals. As the troops came home, the President and Congress, through the budgetary process, began reducing the size of the Armed Forces. The goal in the Army was to shrink the force structure below one million men on active duty. Correspondingly, the officer corps was to be reduced from 148,000 to below 100,000 (figure 1). To accomplish this reduction, several actions were taken, the most significant being:

- Liberalized policies to allow voluntary release from active duty, liberal resignation policies, and early out programs.
- Three reductions in force (RIF), through involuntary separation of officers. The number of officers involved were 5,100—FY 72, 4,900—FY 74, and 2,200—FY 76.
- Reducing the number of officers accessed in year groups 1972-78.

From a 1968 accession of 31,000 officers, the accession dropped to slightly over 7,000 officers in 1972 and in 1973. Concomitantly, as the size of the officer corps diminished, time in service/time in grade requirements for promotion stretched out for company and field grade officers.

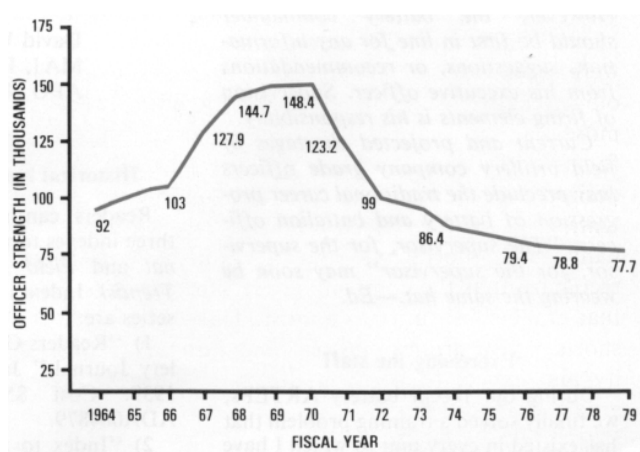


Figure 1. Size of the officer corps (OPMD managed officers).

The period of the RIFs was traumatic for the Army because good, combat experience officers had to be released from active duty to meet the mandated strength reductions. Regular Army officers were included in the RIF of FY 76, and less frequent promotion boards and decreases in selection rates were experienced. As a conscious decision, the Army decided to limit accessions in year groups 1972-78 to prevent further cuts in the combat experienced older year groups which led to our present company grade shortages. As the overstrength Vietnam year groups have gone through the promotion window to major, the captain strength has continued to drop. By 1983, the Army will have a shortage of over 8,000 OPMD managed company grade officers. This shortage is exacerbated as our force developers expand the Army structure by activating new battalions, introducing new weapons systems, and adopting tactics and doctrine that require additional personnel.

Because the FA branch accessions were depressed in year groups 1972-77 with the Army as a whole, there is a significant shortfall in captains and first lieutenants. Ideally, FA branch should access 957 second lieutenants each year to meet our desired year group structure. This figure allows a 50 percent attrition factor for persons in each year group to complete 10 years in service and be considered for promotion to major. With this idealized year group structure, we could meet our officer requirements in the TOE/TDA units.

As seen in figure 2 there is a significant shortfall in "desired" versus "actual" year group strength. This shortfall represents our current captain and first lieutenant shortages. As year group 1969-70 personnel are promoted to major, the shortage will worsen and will not improve until the 1976-79 year group lieutenants make captain. The FA shortage is the most critical of all the branches because we took a higher proportion of under-accessions in 1973, 1974 and 1975. During those years, Armor branch received approximately 200 percent of their accession quotas to meet planned force structure increase in Armor. To meet Armor quotas, accessions were taken from the FA and ADA branches, worsening our strength posture. In 1978, the FA branch received more than the ideal number of accessions to compensate for its critical shortage. In FY 79, we plan to meet our desired accession goal and should continue to do so. Until 1983, however, there will be a Field Artillery company grade shortage. Commanders at all levels must recognize that the company grade shortage is real and that grade substitution is a must. Those who are in the shortage year groups must carry additional responsibility and expect to perform duties at the next higher grade.

Units are now placing lieutenants in command and staff positions, and captains are receiving multiple command

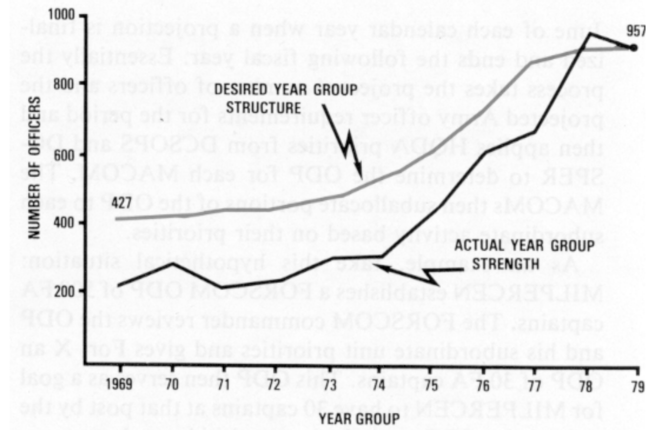


Figure 2. FA year group structure versus actual strength.

tours and some are serving as battalion S3s and X0s. We are over 700 captains short compared to our authorized strength and, with each 0-4 promotion board, that shortage will increase. Now, we are accessing the appropriate number of lieutenants and, when they become captains, the shortage will diminish. In the meantime, the lieutenant must prepare himself to accept the additional responsibility he will shoulder by having to serve in a captain slot.

Adequate consideration must be given to the fact that out lieutenants and captains are serving in difficult times, facing awesome missions with diminished resources, and that their development is key to our future leadership. Shortage year group personnel will remain short throughout their military careers, thereby enhancing their individual probability for future promotion. Most importantly, their vast troop experience developed during the company grade and field grade years will be needed at the highest levels of the Army.

The rumor that our officers are resigning in wholesale numbers is not true. During the last several years, our attrition rate has been steady at 4.3 percent. This rate in itself is not alarming but, in those units where an officer does resign, another captain or lieutenant must pick up the load. Our shortage problem is not due to resignations but rather to the past limitation on officers assessments.

Distribution of the FA shortage

Because of the shortage of company grade officers, available officers must be distributed equitably worldwide within Army priorities. This is a function of MILPERCEN, accomplished with a strength management tool known as the Officer Distribution Plan (ODP). The purpose of the ODP is to project, by grade and specialty, each major command's (MACOM) fair share of available officers. The ODP process begins in

June of each calendar year when a projection is finalized and ends the following fiscal year. Essentially the process takes the projected number of officers and the projected Army officer requirements for the period and then applies HQDA priorities from DCSOPS and DCSPER to determine the ODP for each MACOM. The MACOMs then suballocate portions of the ODP to each subordinate activity based on their priorities.

As an example, take this hypothetical situation: MILPERCEN establishes a FORSCOM ODP of 500 FA captains. The FORSCOM commander reviews the ODP and his subordinate unit priorities and gives Fort X an ODP of 30 FA captains. This ODP then serves as a goal for MILPERCEN to have 30 captains at that post by the end of the ODP period. As requisition cycles are received at MILPERCEN, the ODP is compared to the projected operating strength and, if the post is below ODP, a requisition may be validated. Validated requisitions are then sent to the assignment branches for fill action.

The foregoing process may seem simple, but it is actually very complex. Each factor in the ODP equation is dynamic and variable as in any projection. Several key points can be noted in a study of the ODP:

- The specialty 13 captain inventory is less than the authorized—no MACOM receives all of their authorized FA captains.
- Overseas commands and certain CONUS units receive a higher ODP because their priority is greater.
- Individual unit manning levels are set by local commanders, based on their priorities. MILPERCEN has no influence on where individual officers are assigned within the installation or overseas command. As long as the position supports the control specialty in which the officer was sent by MILPERCEN, the local commander may utilize the officer as he deems necessary.

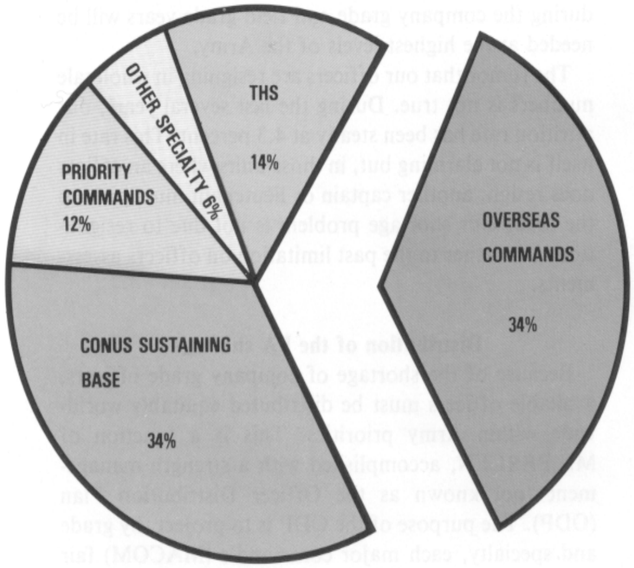


Figure 3. Distribution of captains.

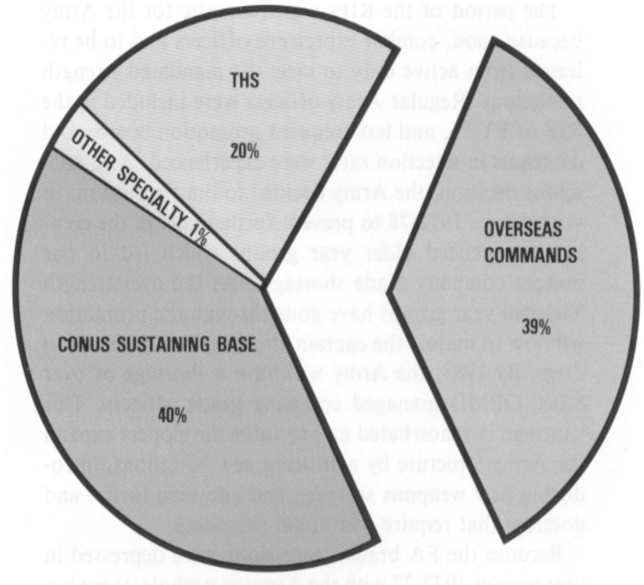


Figure 4. Distribution of lieutenants.

Figures 3 and 4 represent a worldwide distribution of FA captains and lieutenants, based on the ODP.

- First, a significant portion of our officers are in the Transient, Student, Holding (THS) account at any time—not available in the units. The major slice is in schools such as FAOAC, FAOBC, Advanced Schooling, Degree Completion Programs, Defense Language Institute, and other programs. These percentages remain fairly constant all year long.
- Second, 1 out of 3 captains and almost 4 out of 10 lieutenants are in overseas areas at any given time. Since overseas commands have a higher priority of fill, the size of the overseas accounts dramatically impacts on tour equity and turn around time to the next overseas tour. Because of our branch's overseas structure, one overseas accompanied tour and one overseas unaccompanied tour is the normal tour equity for our company grade officers. Correspondingly, our current turn around time between overseas tours or permanent changes of station is 24 to 30 months.
- Third, assignment in specialties other than specialty 13 (FA) are few. For example:

1) Under OPMS, as referenced in DA Pam 600-3, chapter 24, company grade assignment divisions are only required to identify an officer's other specialty, not necessarily develop it. Specialties are developed at the field grade level through assignments. When possible though, specialty development is begun in the company grade years through schooling and/or assignments.

2) With our shortage of company grade officers, specialty 13 requirements create a higher usage rate in that specialty.

● Fourth, at the grade of captain, duty in one of the priority assignments of USAREC, ARR, USMA, and ROTC reflect a constant demand. Only those officers who have successfully commanded, attended the advanced course, completed overseas tour equity, and possess an above average efficiency file can serve in these assignments. The "Big 4" account, as it is called, is the highest priority account for fill. Semiannually, the Army Vice Chief of Staff reviews the assignment priorities which serve as the basis for allocating officers worldwide. The current priorities are:

1) Priority 1 — USMA, ROTC, Army readiness regions, and USA Recruiting Command.

2) Priority 2 — Joint and special activities.

3) Priority 3 — Rest of the Army according to the DA Master Priority List. These are the HQDA priorities which are factored during the ODP process.

● Fifth, the CONUS sustaining base, consisting of FORSCOM, TRADOC, and other commands, experiences the maximum impact, because it is the resource pool to meet other higher priority needs. Officers in CONUS are subject to the requisitioning demands of the overseas commands, the Big 4 accounts, and also the requirements of schooling quotas for FAOAC and civil schooling. It's no wonder that CONUS commanders ask "Where are the officers?"

This turbulence in CONUS must be a major consideration in an individual officer's career planning and the commander's utilization of his assigned officers. As overseas requisition cycles are received, the file of each available CONUS based officer is reviewed. The assignment officer, in screening each officer's file, considers overseas tour equity, time on station in CONUS, professional development needs, and personal considerations. The officer who has not been overseas or who has been back the longest is the most vulnerable for overseas assignment. An officer can materially assist the assignment process by having a current, realistic DA Form 483, Officer Preference Statement, in his file. This form serves as a source for current duty position, phone number, geographic desires, and family considerations. Many officers think the "dream sheet" is never looked at in the assignment process and fail to submit one or keep it current. Although assignment officers cannot make everyone happy all the time, those individuals who participate in their assignment process will at least receive careful consideration consistent with the Army requirements.

Since CONUS commands experience the most officer turbulence, prudent commanders realize that prior coordination with FA Branch on command stabilization, advanced course scheduling, and key unit operational events can pay dividends. At FA Branch, our primary mission is to meet worldwide Army requirements, but whenever possible we adjust for the local unit situation. The key is to discuss unit officer plans before issuing overseas or advanced course orders to preclude disruption of the officer's individual career plans.

Professional development

The professional development of our officers is accorded special importance. Although the career management branches must first meet worldwide requirements, a standard must be applied to each assignment as defined by the professional development objectives in that specialty. Since we manage our FA company grade officers for approximately 10 years before their file is handed to the Majors Division, we must very jealously protect each officer's development in specialty 13 as compared to his contemporaries. Because officers are considered for promotion, command, and senior officer schooling primarily by year group, each officer in a year group must be managed within the specific parameters of that population. It is human nature for us to view our individual progress in light of those around us. What happens to our contemporaries is a yardstick by which we measure our success or failure, our status or lack of it, and our degree of potential for future command and promotion. These concerns are not unique to the military, and it is no secret that the final arbiter of our military performance is the selection board, whether it be for promotion, command, or senior level schooling. With selection rates stabilizing to the levels of 95 percent to captain, 80 percent to major, 70 percent to lieutenant colonel, and 50 percent to colonel, manner of performance and potential, not type of assignments, is the basis for promotion. In the shortage year groups, the future for promotions is bright since the number of officers required in each grade remains constant but the population from which to select becomes smaller.

Another area that looks bright is 0-5 command selection. Figure 5 shows that the opportunity for battalion command declined as the force structure dwindled, but the rate of selection stabilized between 30 to 40 percent.

If your goal is to be a battalion commander, you should be aware of the professional development objectives command selection boards look for. Obviously, a battalion commander should be a proven troop leader, tempered with battery level command and battalion/div arty level staff experience. In specialty 13, a review of the recent FY 79 and FY 80 command board results revealed the following credentials for selection:

● Company grade officers averaged about 33 to 35 months troop duty excluding command time and about 20 to 22 months battery level command.

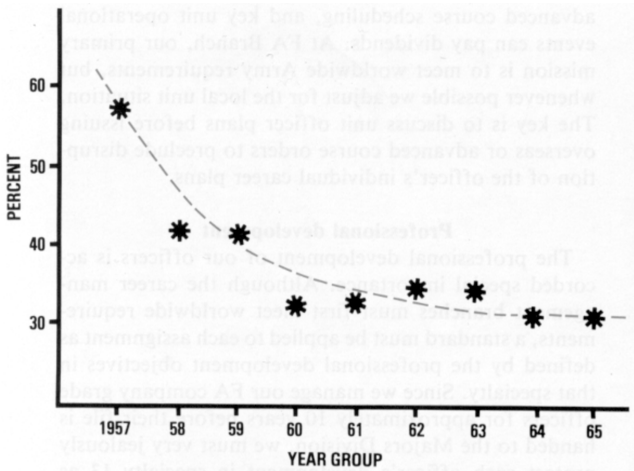


Figure 5. Percent of lieutenant colonels with battalion-level command.

- Field grade officers averaged about 24 to 26 months troop duty as a major with no more than 37 months since last troop duty assignment as of selection.

Troop duty is generally defined as brigade level and below. As with any selection statistics, these represent averages. Some officers did more, some did less, but the majority of those selected were in these parameters. Bear in mind that our current 0-5 command selection boards are considering the Vietnam era year groups that experienced the reductions in force. Their assignments, professional development objectives, and officer management systems were different from those in our current shortage year groups. Because of the current shortage and the fact that our specialty 13 utilization rate has increased, year group 1971-77 officers will probably serve in the following assignments by the time they become eligible for command selection:

- Company grade officers will average about 60 months troop duty excluding command time and 24 to 30 months battery level command time.
- Field grade officers will average 24 to 28 months troop duty as a major.

While these average months are a prediction for the late 1980s and early 1990s, assignments are now being made which will result in these figures.

Earlier, we stated that FA branch must jealously guard each officer's specialty 13 development. In light of these expected trends for command selection, each assignment we make must contribute to the achieving of that significant long range professional development objective—battalion command. Throughout the series of assignment decisions our goal is to assure each officer the opportunity to achieve those developmental steps within his specialty combination toward the grade of lieutenant colonel. Even though career management responsibility is transferred from the Company Grade Division to the Majors Division upon an officers selection to 0-4, assignment actions during the later captain years are coordinated because they can significantly affect the timing and availability for 0-4 level assignments, particularly troop duty. The 16 years of service target for promotion to lieutenant colonel must be viewed as a continuum of opportunities for an officer to shape and nurture his professional development. Field Artillery assignments, while necessary to meet Army requirements, are generally flexible enough to permit any officer an opportunity to experience overseas duty, the variety of FA weapon systems (both cannon and missile), and the unique duties of Army training centers and special weapons detachments—all leading to a true professional leader.

The Field Artillery branch can equitably distribute overseas tours, vary the type of assignments, advise and counsel individual officers on their progress, but the critical day-to-day professional development responsibility falls on the individual officer and his commander. With each assignment, the officer must do the best possible job he can. He should seek guidance from his commander and ask for feedback on his performance. The commander's role is to develop, within his capabilities, the innate abilities of each officer. Through a series of unit level command and staff assignments, with adequate counseling on the officer's performance, the local commander can achieve this objective. All three legs of the professional development triangle—the officer, the commander, and FA Branch (MILPERCEN)—acting in concert, can achieve our ultimate objective of a professional officer corps. The key is operating from a common grid established for professional development—DA Pam 600-3, Officer Professional Development and Utilization. All must realize that our shortage year groups will be afforded equal assignment opportunities and that advancement ultimately will be based on performance and demonstrated potential.

In summary, our current company grade shortage was derived from necessary policies instituted during the Vietnam drawdown. The shortages are real, with no relief until 1983 when our newly commissioned lieutenants make captain. As the shortage year groups officers go through their careers, Army requirements in specialty 13 will be driven by the need to keep our FA units manned at a level where combat readiness will be maintained. This will create an array of troop assignment opportunities, all of which will reinforce leadership and managerial skills. These officers will constitute the most professionally developed corps of future commanders our Army has experienced since World War II.

LTC Leslie E. Beavers is Chief of the Field Artillery Branch, Company Grade Combat Arms Division, MILPERCEN, and MAJ Glen D. Skirvin is the former Captain's Overseas Career Manager in the FA Branch.

VIEW FROM THE BLOCKHOUSE

Lance Missile Mechanic Course

We have some good news for the Lance missile community! Top graduates of Lance Missile Crewman Advanced Individual Training (AIT) will be offered a two-week Lance Missile Mechanic Course. The course covers the fundamentals of missile-peculiar equipment, such as the M39 handling unit, launch fixture, and associated ground support equipment.

Graduates of the course are not awarded an MOS or additional skill identifier, which may result in graduates being misutilized. The soldier will receive a Fort Sill graduation certificate, and a record of attendance will be placed in his 201 file. During inprocessing, a quick check of a soldier's DA Form 2-1 will reveal whether or not he is a graduate of the course.

The Field Artillery School will train about eight mechanics a month, so they will be arriving in units in the near future. A list of graduates will be forwarded to commanders periodically by the Weapons Department.

Feedback on how well the graduates perform in the field will be appreciated. Send comments to:

Commandant
US Army Field Artillery School
ATTN: ATSF-WD-GM-L
Fort Sill, OK 73503

POC: CPT D. Strack, 351-5424/5301, WD, GMD, Lance Branch.

SQT policy being reviewed

The Army is considering reducing or eliminating the written portion of the Skill Qualification Tests (SQT) for grades E1 through E5 in combat arms MOSs, according to Training and Doctrine Command.

Trainers, personnel managers, and field units are reviewing the SQT based on the results from the initial testing of the combat arms. Any changes decided on will not take effect until 1980.

The SQT is designed to test the soldier's ability to perform the duties of his MOS—not how well he can answer written questions. Soldiers have been doing well in the "hands-on" component and doing poorly on the written portion. One major concern involves the use of SQT results to determine promotion potential and eligibility—a score of 80 percent, which is much higher than the average currently being achieved in the combat arms.

Changes to 13E training

It is the policy of USAFAS to constantly upgrade and improve its courses. Consistent feedback from the field as well as from our academic departments, regarding Skill Level 1 MOS 13E, warrants the following changes. The training location for the Skill Level 1 tasks listed below will change from Advanced Individual Training (AIT) to Supervised on the Job Training (SOJT).

Field Communications

Task No	*Task*
-0215	Install and operate radio remote control equipment
-1383	Prepare and operate switchboard SB-22/PT

Maintenance

Task No	*Task*
-0210	Perform operator checks and services on radio set AN/VRC-46
-0216	Perform operator checks and services on radio remote control equipment
-0218	Perform operator checks and services on antenna RC-292

The implementation of these changes will begin with the Cannon Fire Direction Specialist Course (CFDSC, 250-13E10) class 38-79, starting 2 July 1979.

Future editions of the Soldier's Manual and the Commander's Manual will reflect the changes. (LT Lara, DCRDT)

Muzzle velocity differences for 8-inch M110A2

The Army's 8-inch M110A1 howitzers are being equipped with muzzle brakes, allowing them to fire the charge 9, M188E1 propellant. The addition of the muzzle brake will change muzzle velocities for all charges, thus affecting the computation of firing data. The following table, extracted from Change 3 (Nov 78) to FT 8-Q-1 (Jan 76), shows the difference in muzzle velocities caused by the addition of the muzzle brake.

Charge	Propellant	M110A1	M110A2 (muzzle brake)	Difference
1G	M1	253.9	252.0	- 1.9
2G	M1	278.1	278.0	- 0.1
3G	M1	308.4	308.0	- 0.4
4G	M1	352.5	353.0	+ 0.5
5G	M1	423.2	424.0	+ 0.8
5W	M2	446.3	447.0	+ 0.7
6W	M2	520.5	522.0	+ 1.5
7W	M2	608.2	608.0	+ 0.2
8	M188E1	710.2	716.0	+ 5.8
9	M188E1	Not authorized	778.0	- - -

Until calibration with the muzzle brake on the tube, the differences shown in the preceding table should be accounted for during computations. After calibration with the muzzle brake, the muzzle velocities derived during calibration are used. The following examples demonstrate how to correct firing data with these new muzzle velocities before calibration:

FADAC

Correct the muzzle velocity (MV) by typing in the correct MV, given in this appendix or Change 3 to FT 8-Q-1, as part of the preparation for action. TM 9-1220-221-10, FADAC User's Manual, gives details on entering the MV into FADAC.

Manual computation

For manual computations until a registration can be conducted, the difference between the standard MV for the M110A1 and the standard MV for the M110A2 may be used as the velocity error (VE) for any met + VE computation performed for the purpose of computing a "best available data" GFT setting (see FM 6-40, Dec 78, for solution of met-to-a-met check gage point). Once a registration has been conducted, no further corrections for the difference in standard MVs between the M110A1 and M110A2 need be made because the registration corrections obtained will automatically compensate for any difference in muzzle velocity.

Note. *Units should calibrate as soon as possible after the muzzle brake is added and again after 150 to 200 rounds have been fired because the muzzle velocity may increase by as much as* +7 meters per second (m/s) *during the first 150 to 200 rounds fired from a new tube. A phenomenon called ballistic hump causes this increase in MV during the first 150 to 200 rounds of tube life. Subsequently there is a muzzle velocity-stable period and, finally, the more familiar muzzle velocity loss*.

All firing table data for high explosive projectile M106, given in Part I of FT 8-Q-1 and Change 3 of FT 8-Q-1, are also applicable to chemical projectile M426 provided the following corrections are added to the MVs listed above for the M110A2 to compensate for an increase in muzzle velocity.

Chemical projectile M426

Charge	Velocity (m/s)	Charge	Velocity (m/s)
1G M1	+ 2.0	5W M2	+ 0.8
2G M1	+ 1.6	6W M2	+ 0.8
3G M1	+ 1.4	7W M2	+ 0.8
4G M1	+ 1.1	8 M118E1	+ 0.8
5G M1	+ 1.0	9 M118E1	+ 0.8

FADAC procedures for 155-mm FASCAM rounds

FADAC procedures for FASCAM (family of scatterable mines) rounds are as follows (FADAC Revision 5A Program Tape): Compute M483A1 self-registration (SR) mode data to the target with FADAC. Using the base fuze setting (FS) and quadrant elevation (QE) from the FADAC, enter the firing table addendum for the model of FASCAM projectile being fired. Determine the quadrant elevation correction and fuze setting correction from tables A and B respectively, for charge being fired. Apply determined correction to M483A1 data from FADAC for FASCAM firing data. The deflection (DF) given by FADAC for base round is used as DF for FASCAM round.

Example:

1) *FADAC data for M483A1 SR.*

a) CHG 5G, FS 26.2, DF 3186, QE 415.

b) Corrections for shell M692 (FASCAM) FT 155 ADD-L-1: QE = + 81 mils; FS = – 0.3.

2) *M692 FASCAM firing data*.

a) Computation: FS = 26.2 – 0.3 = 25.9; QE 415 + 81 = 496.

b) Firing data: CHG 5G, FS 25.9, DF 3186, QE 496.

Another method is to compute M483A1 self-registration mode data to the target with FADAC; then using the graphical firing table (GFT), place the manufacturer's hairline over the base QE and FS from FADAC and read FASCAM data to be fired from appropriate scale of the GFT.

Note: *Manual procedures for computing firing data for the FASCAM projectile are given in FM 6-40 (Dec 78), chapter 11.*

RDP—30,000 meters

Units (155-mm and 8-inch) wishing to order the range deflection fan protractor (RDP), scale 1:25,000, maximum range 30,000 meters, should use NSN 1290-01-071-0716.

GFT fan cursor

The cursor for the GFT fan shown in FM 6-40 is now available through normal supply channels. Order PN1058694, NSN 5355-01-076-3554, plastic cursor.

COUNTERFIRE SYSTEMS REVIEW

Target acquisition battery— how to improve peacetime utilization and training

The ability of the target acquisition battery to perform its mission of locating hostile artillery, using its acquisition platoons, depends not only on available equipment, but also on the state of training of the personnel who operate the equipment. Also, higher headquarters must know how to employ the acquisition platoons in a tactical situation and how to use the information they provide. In many cases, when operating with division artillery in the field, acquisition platoons feel ignored when they forward information to the tactical operations center (TOC) but do not receive feedback as to the accuracy of that information or what action was taken. In some cases they are forced to occupy field positions where the only thing they can range on is shell bursts.

The following is an excerpt from a letter written by 2LT Allen J. Pencek (Btry E (TA), 139th FA, Indiana National Guard) who, when he felt his sound/flash platoon was being ignored in a field exercise, did something to bring attention to his platoon:

> "When my platoon went to the field for the first time, few in division artillery knew what we did. Our reported sound/flash locations were given little attention. On one occasion, my personnel got discouraged when our locations were not acted upon, so the next grid location we made, I got on the radio and made a call to a battalion commander who I thought had guns at that location. I told him we had located one of his guns and gave him the grid. He wanted to know who we were and asked for my location. In a short time he was at my CP and he wanted to know all about sound and flash and what we could do for him."

This excerpt is applicable to many target acquisition agencies employed in the field. To improve training of these agencies and to apprise all division artillery units as to their effectiveness, the platoons would best be employed in the aggressor role to locate division artillery units when they are firing (not limited to ranging on shell bursts as is too often the case). The locations should be reported to the tactical operation center who in turn would evaluate the location, notify the locating agency as to location accuracy, and notify the located unit as to how accurately they have been located and who the locating agency was. This would serve two purposes:

1) The platoons would be operating against artillery as they would in combat.

2) The artillery units would know how accurately they can be located by target acquisition means.

The same principle can be used for training weapon locating radar (AN/MPQ-4A) crews. Another excerpt from Lieutenant Pencek's letter points out that the preparation before field training is not an easy task:

> "I had to dig in books to find answers for my platoon and myself even though I graduated from the Field Artillery Target Acquisition and Survey Officers Course. But that is not to say the course lacked; it did not. To those that follow me, learn all you can. Sound ranging is here to stay; dig in and make the most of it and it will be a rewarding part of your career you can be proud of."

This lesson learned can be applied to all of us in the Field Artillery System. Targeting is an important facet of our business and if we do not properly train or use the organic and external assets available to us, our guns will remain silent for want of good targets.

Correction

The item entitled "Shelter S-13A/MPQ-4A" in the Counterfire Systems Review section of the May-June 1979 *FA Journal* should have read "Shelter S-134/MPQ-4A."

The "nuclear" ARTEP in USAREUR—an idea whose time has come

by LTC Robert B. Rosenkranz

The cliché, "Nothing is so powerful as an idea whose time has come," has never been more appropriate than when applied to the concept of nuclear certification in a tactical setting. For over 20 years the Army retained the fiction of separation between a tactical unit's nuclear and conventional capabilities and suffered with the effects of that mind set. Field artillerymen and combat engineers reluctantly acceded to the rules of the game and devised an intricate scenario to insure survival in the endless cycle of inspection roulette. Invariably the ballet established for the battalion Technical Proficiency Inspection (TPI) (later the Nuclear Surety Inspection (NSI)) included specially designated personnel and equipment selected for excellence, rather than by actual tactical mission assignment. In a TPI/NSI you might draw on any resource, even outside the battalion, in order to "pass," and inspectors rigorously applied standards which would be impossible for a battalion forced to execute all its tactical requirements, rather than just nuclear.

The nuclear surety bureaucracy lived comfortably with the deception since exigent personnel and equipment problems remained buried within the expedients adopted by the tested battalion; e.g., sergeants became perimeter guards, specially outfitted load carriers were rolled from their isolated bays, courier officers and special weapons officers (SWO) frantically memorized reams of gibberish, and the entire battalion staff supervised endless rehearsals of a canned convoy. Preparatory events culminated in a hushed call from higher headquarters reminding all that this was "career dependent," and the inspection team chief arrived to in-brief with the hilarious and disingenuous, "We're just here to help."

This scenario may be laid to rest with the advent of ARTEP/Technical Validation Inspection (TVI) certification—the field artillery's equivalent of the great leap forward. The TVI concept, initiated at Fort Sill earlier in 1978, was brought to Europe in the fall of 1978 for the acid test. Implementation in USAREUR and indorsement by the preeminent field command would establish credibility for the new program.

In the summer of 1978 messages to the field directed USAREUR to implement ARTEPs for certification in conjunction with a compatible TVI schedule. The first scheduled nuclear ARTEP in Europe was to be administered to the 1st Battalion, 76th Field Artillery (8-inch), in October 1978 at Grafenwoehr. In September, an orientation team from USAREUR briefed the 3d Infantry Division Artillery on the conduct of a certification ARTEP, a seeming contradiction in terms. It would now be necessary to test on an ARTEP, the theory of which categorically rejects testing in favor of evaluation.

The USAREUR briefers, led by LTC Larry E. Minnich, attempted to dispell the perception of "testing." They emphasized that the ARTEP change resulted in nuclear requirements which comprise only eight percent of the listed ARTEP tasks, and therefore the ARTEP should not be distorted by an overemphasis on nuclear operations. They also exhorted the division artillery evaluators to retain the ARTEP spirit and train to standards, to include repetition of poorly performed nuclear procedures. However, some skepticism remained in everyone's mind as to whether the battalion and its evaluators could avoid reverting to the TPI/NSI mentality.

Prelude

In making rapid adjustments to conform to the new directives, the 3d Infantry Division Artillery enjoyed a significant advantage in its traditions and its commander. BG Joe S. Owens, the previous commander, had conducted nuclear ARTEPs for all his battalions over a two-year period in anticipation of the new approach. His successor, COL Russell L. Parsons, a former director of the Fort Sill Gunnery Department, is an outspoken advocate of tactical realism in nuclear operations and is firmly dedicated to implementing and supporting the long overdue changes. The results of the ARTEP reflect the exceptional effort put forth by the evaluation team and the artillery battalion to faithfully implement Department of the Army guidance on the conduct of the revised ARTEP.

The 1st Bn, 76th FA, deployed to Grafenwoehr MTA three weeks before the ARTEP to conduct live fire training. There was not enough time for the USAREUR training aids center to construct a complete set of mockups to simulate the nuclear basic load (the PNL) as outlined in the revised ARTEP. Instead, the battalion used nuclear weapons dunnage in its 2½-ton load carriers to simulate the PNL. The three M423 nuclear trainers were transported in the three firing battery M109 assembly vans. Considerable planning went into the assignment of personnel to nuclear weapons tasks, the most critical concern with regard to MTOE inadequacies. In fact, at Authorized Level of Organization 2 strength, nuclear surety requirements are only met by malassignment, or through the exercise of the "elastic clause" which takes cognizance of a commander's expanded prerogatives in wartime. Problems with equipment are less severe until simultaneous nuclear fire missions occur.

The ARTEP

The ARTEP began at midday Sunday and ended midday Tuesday. During this period the battalion expended 240 high explosive rounds and fired three high explosive spotting (M424) live nuclear missions, plus all the level one conventional fire missions listed under the battalion and battery ARTEPs. The unit moved six times, performed the nuclear tasks listed in change one to ARTEP 6-165, and performed the remainder of the conventional tasks required by the level one battalion ARTEP.

Personnel, equipment, and weapons

Figure 1 depicts the distribution plan for personnel and equipment to best support nuclear operations under all possibilities of commitment. Each firing battery assembly team consists of four assemblers, an NCOIC, and a battery special weapons officer, who is also the battery fire direction officer (FDO). The battalion S3 section has a special weapons section consisting of a special weapons officer, a special weapons NCO (SWNCO), and a personnel reliability program (PRP) clerk who is also a custodial agent (CA). Headquarters and headquarters battery (HHB) provides 19 security personnel for the battalion field storage location (FSL) plus a radio jeep. Service battery provides an alternate load carrier/5-ton guard vehicle with tiedowns. The 18 FSL guards for the three guard shifts are personnel reassigned from the Redeye, fire direction center (FDC), and communications sections. The Redeye section was tested on its tactical capabilities during the ARTEP and could not provide guards regularly. HHB is tasked to provide a special weapons section and the FSL guards, because service battery is already overcommitted in providing conventional ammunition, maintenance, recovery,

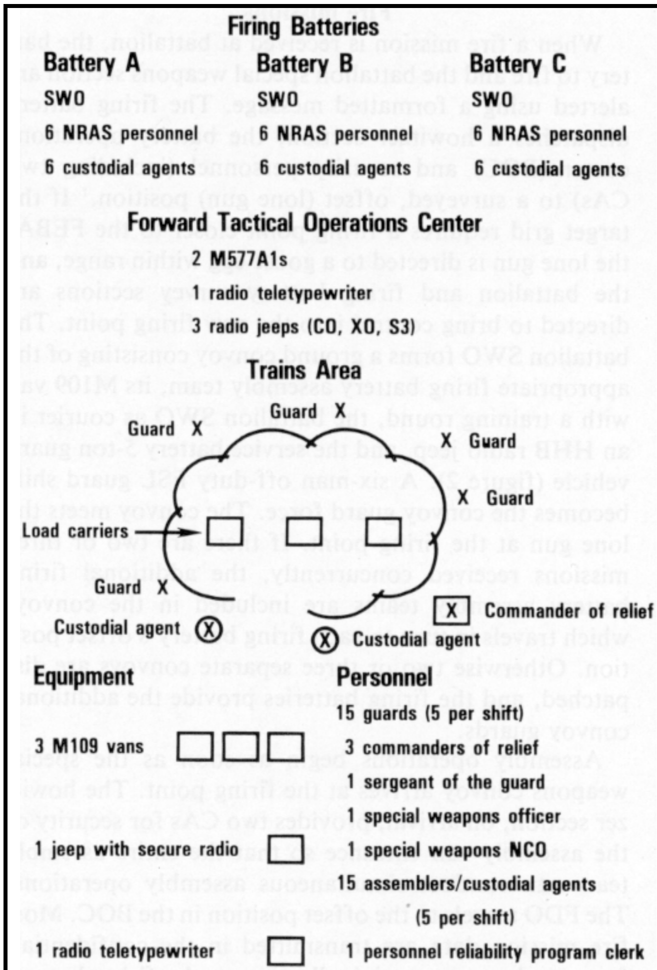


Figure 1. Distribution plan.

supply, and food service. Custodial agents for the battalion FSL are drawn from the 15 firing battery assemblers. During fire missions the CA population was reduced. With three simultaneous nuclear missions the PRP clerk and another CA provided by HHB secured the FSL gate. Although six qualified CAs for three guard shifts are desirable, it was emphasized in Department of the Army guidance that extreme situations created by casualties or tactical commitments justify a waiver of PRP requirements to accomplish the mission. This did not become necessary during our ARTEP.

The simulated rounds are carried in the battery load carriers located inside the FSL and are transloaded to the M109 vans located outside the FSL for fire missions. The rounds are consolidated at a battalion location to increase security, enhance tactical flexibility, centralize control, and establish a concentration of nuclear weapons expertise. In fast moving offensive operations, the rounds may be moved forward to firing battery FSLs.

Fire missions

When a fire mission is received at battalion, the battery to fire and the battalion special weapons section are alerted using a formatted message. The firing battery dispatches a howitzer section, the battery operations center (BOC) and security personnel (including two CAs) to a surveyed, offset (lone gun) position.[1] If the target grid requires a firing point closer to the FEBA, the lone gun is directed to a goose egg within range, and the battalion and firing battery survey sections are directed to bring control into the new firing point. The battalion SWO forms a ground convoy consisting of the appropriate firing battery assembly team, its M109 van with a training round, the battalion SWO as courier in an HHB radio jeep, and the service battery 5-ton guard vehicle (figure 2). A six-man off-duty FSL guard shift becomes the convoy guard force. The convoy meets the lone gun at the firing point. If there are two or three missions received concurrently, the additional firing battery assembly teams are included in the convoy, which travels in turn to each firing battery's offset position. Otherwise two or three separate convoys are dispatched, and the firing batteries provide the additional convoy guards.

Assembly operations begin as soon as the special weapons convoy arrives at the firing point. The howitzer section, on arrival, provides two CAs for security of the assembly van entrance so that the entire assembly team can conduct simultaneous assembly operations. The FDO travels to the offset position in the BOC. Most fire mission data are transmitted in the confidential, formatted message originally sent to the firing battery and the battalion special weapons section; however, the target grid must be sent by more secure means. This can be time-consuming and is illogical. The firing unit location is confidential; yet the enemy grid is secret. Both battalion and battery FDCs compute the nuclear mission, and, if there is a disagreement, battalion data are fired. If the battery FDC is otherwise occupied, the BOC can compute the mission.

All nuclear missions were successfully concluded during the ARTEP with an average assembly time well within standards.

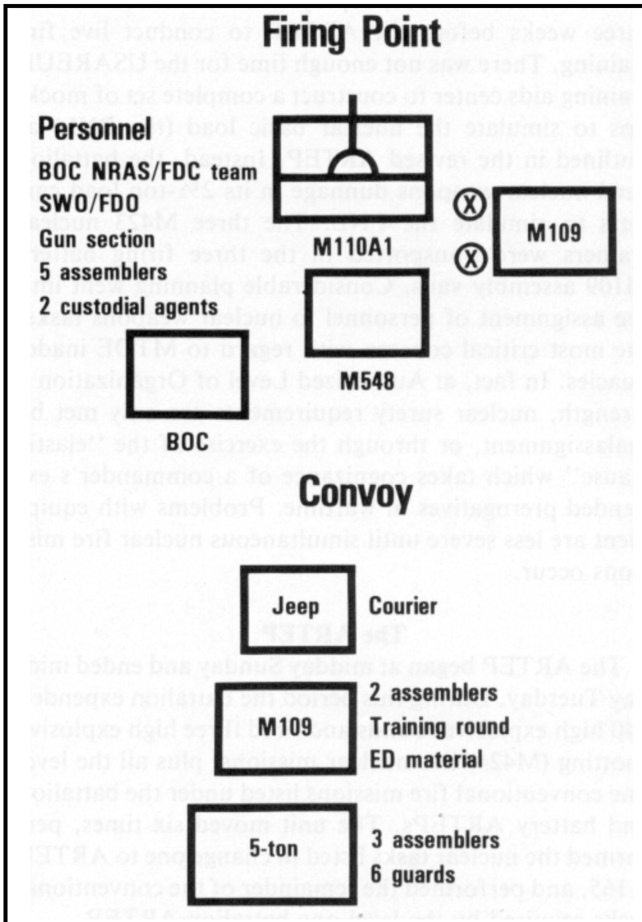


Figure 2. Fire mission configuration.

Other facets of the ARTEP

During the ARTEP the battalion also was evaluated on air resupply, emergency destruction of the PNL, cancelled fire and repackaging, an M424 high burst, dry nuclear missions, nuclear accident procedures, nuclear custody and accountability, and Seventh Army Nuclear Release Authentication System (NRAS) procedures. No significant problems were identified, and conventional operations conducted concurrently did not adversely affect nuclear play. Several nuclear actions were conducted in full mission oriented protection posture.

A key factor insuring success on the ARTEP was careful prior planning. Every participant had been thoroughly briefed on nuclear procedures and techniques. In training, the battalion had tested the worst case, simultaneous nuclear missions during displacements, so the system had already been strenuously exercised. This paid off because the Third Infantry Division Artillery truly put the battalion through its paces. The density and intensity of events forced the 1-76th FA to strain every resource to meet the ARTEP standards. Nuclear surety umpires were exacting, as were their counterparts

[1]The tactic of firing the nuclear mission from the main battery position can be employed, if the main position has not yet been fired from, or if TOT time does not permit the offset technique, in which case the battery should displace following the nuclear mission. See Chapter 4, FM 100-50.

as umpire control. By noon Tuesday a weary battalion welcomed the cessation of hostilities. The battalion received an evaluation of Level One from division artillery.

The Department of the Army Inspector General

The Inspector General of the Army, LTG Richard G. Trefry, and the USAREUR IG, Colonel Howitz, spent one complete day of the ARTEP with Colonel Parsons and the 1-76th FA. General Trefry's comments gave force and substance to the message traffic which preceded the ARTEP. The field artillery had waited years to prove its point. Artificiality and duplicity were to become things of the past. Evaluations would henceforth be realistic, pragmatic, and a legitimate measurement of combat capabilities and training readiness. If the MTOE did not support the nuclear mission, the ARTEP would demonstrate it. If PRP standards were too strict for the prevailing combat situation, the commander could relax them. If a unit was not able to train to nuclear proficiency in a tactical environment, then it would not be certified. Essentially, it would now be the tactical commander's decision. General Trefry's comments were enthusiastically received by the entire Third Infantry Division chain of command.

The Nuclear Surety Evaluation and the TVI

Shortly after the ARTEP, division artillery conducted a tailored Nuclear Security Evaluation (NSE) of the 1-76th FA at their home station in Kitzingen, Germany. PRP records, management and administration, publications, maintenance and accountability records, and storage procedures were inspected. The results of the ARTEP and NSE were compiled in a final report signed by the division artillery commander. Colonel Parsons evaluated the 1-76th FA as nuclear capable. Within 90 days of the ARTEP, the USAREUR IG dispatched a three-man TVI team to inspect the 1-76th FA pursuant to nuclear certification. The team evaluated each five-man battery assembly team as it performed technical operations in its M109 van. The TVI team also inspected management and administration, including the PRP, publications, maintenance and accountability records and procedures, and the ARTEP/NSE report. During the two-day visit, LTC Minnich, the team chief, and Colonel Schweizer, a DAIG observer, conducted an intensive survey of battalion and division artillery personnel to determine attitudes and perceptions regarding tactical nuclear operations and the new evaluation procedures. The opinions expressed by Colonel Parsons and the artillery battalion emphatically endorsed the revised approach, a testament to its credibility, since it actually constitutes a more demanding and comprehensive evaluation than the NSI. Based on the ARTEP and NSE results and the TVI, none of which revealed any substantive weaknesses in the battalion's nuclear surety posture, USAREUR certified the 1-76th FA nuclear capable. (Agencies of DOD still require an NSI for certification.)

The Future

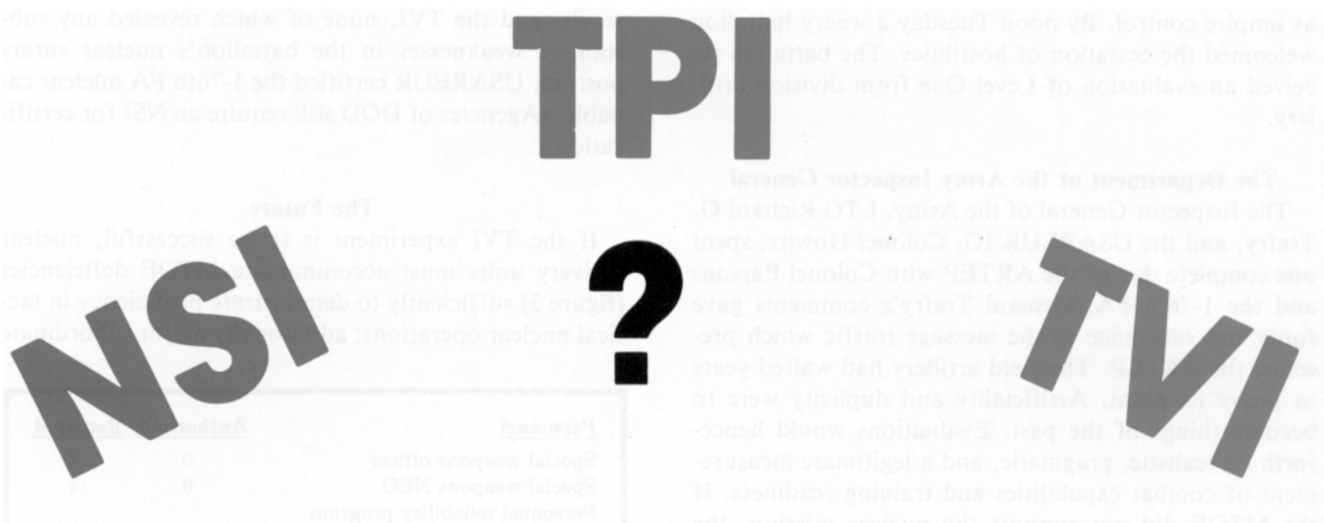
If the TVI experiment is to be successful, nuclear delivery units must accommodate MTOE deficiencies (figure 3) sufficiently to demonstrate proficiency in tactical nuclear operations; additionally major subordinate command (MSC) ARTEP evaluators must apply the ARTEP spirit to Nuclear Surety Evaluations, and major commands must accept Department of the Army guidance without elaborate interpretation, while placing their confidence in MSC commanders. If all this comes to pass, field artillery units will profit immeasurably, combat readiness will be enhanced, and MTOE shortcomings will be identified and corrected. A final purification of the nuclear certification process would remove the Inspector General completely and leave the decision with the ARTEP and within the tactical chain of command. Because of concerns with the uniformity of standards, such a step may be a long time in coming; however, the initial steps in this direction are promising.

Personnel	Authorized	Required
Special weapons officer	0	1
Special weapons NCO	0	1
Personnel reliability program (PRP) clerk	0	1
Sergeant of the guard	0	1
Commanders of relief (COR)	0	3
Guards	0	15
Assembler NCOICs	0	3
Assemblers	12	12

Shortages: Officer—1; NCOs—8; EM—16.

Figure 3. MTOE personnel shortfall.

LTC Robert B. Rosenkranz is a former commander of the 1st Battalion, 76th Field Artillery.



by LTC A. O'Niel Crocker

A rose by any other name is still a rose. It doesn't make any difference what you call it—a TPI is still a TPI! Right? Wrong! The Nuclear Surety Inspection (NSI) has been changed to omit many of the undesirable aspects experienced in the Technical Proficiency Inspection (TPI). The changes have been a long time coming. Hopefully in the future the TPI will not have the effect it formerly had on training and training management.

With the advent of the ARTEP, an opportunity was grasped to eliminate many of the unrealistic requirements previously associated with the TPI. The ARTEP evaluation program was designed to point out weaknesses in training, to validate the efforts of battalions to train toward established standards, and to assist in training the units as they would fight.

Many in the field (and maybe even a few in higher headquarters) have questioned the need for "the modern dance" we have all seen for years. There was little need for a cannon artillery battalion to perform (for various layers of headquarters) "ACT I of the Modern Dance, The Convoy Routine." Those with mud on their boots claimed that it was a "logistical move" and served little purpose for the noncustodial tactical commander. Moreover, previous inspections were made all the more difficult by "peacetime" and "wartime" rules. These rules best describe the ridiculous predicament into which we had gotten ourselves. Various headquarters and inspectors could not even agree on a definition for "peacetime" and "wartime" rules and how the rules were to be applied.

In the spring of 1978, the Army launched new inspection procedures for nuclear units. The new inspection procedures were designed to:

- Cut out the "mickey mouse."
- Remove the distasteful aspects associated with the old TPI.
- Prove to soldiers in the field that the Army leadership was interested in their problems.
- Insure that inspection procedures and techniques did not establish nuclear surety policy.

A key problem area revolved around the age old philosophy that the inspection was only a snapshot of the unit, at that time, and under those circumstances. That has not changed completely, but the unit is no longer in the barrel alone. Systemic problems that impact on the organization are now being searched out. The primary emphasis remains for the unit to perform at the specified time and under certain circumstances. Now the higher headquarters and support organizations are being drawn in for greater scrutiny. Division and division artillery headquarters previously stood idly by and "got over" while a subordinate battalion underwent the inspection, but emphasis is now being shifted to actions by headquarters that support or adversely affect the battalion in the performance of its nuclear mission. These headquarters and other supporting organizations can expect areas to be detected that will require corrective action. Inspections of the future will include a look at the delivery unit *and* a comprehensive look at all aspects of support, regulations, and problems that adversely impact on the unit's nuclear capability.

In August 1978 the transition to ARTEP/Technical Validation Inspection (TVI) evaluation for 155-mm and 8-inch howitzer battalions began. This change recognizes the significant difference between custodial and noncustodial organizations and deletes from the TVI much of the training being evaluated during the organization's ARTEP evaluation. Gone are the simulated situations injected in technical operations by inspectors. Gone is the RBI (reply by indorsement) for the units rated satisfactory. Gone is the nuclear weapon accident and incident control exercise, the requirement for multiple emergency destruction, and at long last—the convoy. [These operations are now performed during training and evaluation based on the ARTEP.] The TVI for noncustodial nuclear capable units who have an ARTEP will include the ability of a unit to conduct technical operations and perform maintenance on war reserve weapons. Also included will be accountability, the personnel reliability program (PRP), nuclear weapons publications and associated equipment, and a review of systemic problems beyond the inspected organization's control. Physical security and movement are evaluated during the ARTEP and, therefore, are not included in the TVI. Results are reviewed by inspectors and data is provided to the Defense Nuclear Agency (DNA) during the current TVI evaluation period.

Technical Validation Inspections for 8-inch and 155-mm battalions will include:

a) Technical Operations:

1) Receipt inspection.

2) Package and unpackaging.

3) Assembly and disassembly (8-inch nuclear loading).

4) Prefire.

5) Changed, delayed, and cancelled fire.

6) PAL operations.

7) Tools and test and handling equipment.

8) Compliance with safety rules.

9) Verification and storage monitoring inspection.

b) Maintenance of war reserve (units with accountability): Condition, records, and visual inspection when necessary.

c) Management and administration:

1) Accountability.

2) Nuclear weapons associated equipment and publications.

3) PRP.

d) Review of ARTEP report.

e) Systemic problem areas.

You can expect the above to be accomplished in one and a half days for a battalion and one day for a separate battery. No tactical scenario is required or desired. The commander may designate a site to perform technical operations which can be a classroom, training bay, etc. As you see, a lot of the "mickey mouse" has been removed, and the organization should no longer have to perform "the modern dance."

These improvements represent a major step forward for the noncustodial tactical commander. The marriage of the ARTEP as an internal evaluation and the TVI as an external inspection removes many unhealthy factors from the organization's training program. *It is important that the ARTEP/TVI system work*. It can work. To insure that the unnecessary requirements do not return to the inspection system, we must make it work. The Defense Nuclear Agency is currently taking a close look at our ARTEP/TVI system.

These changes offer the battalion commander a golden opportunity to reorient thinking away from unrealistic requirements and to train as he is to fight.

Even though the overall thrust of the inspection has changed, two ratings remain—satisfactory and unsatisfactory. The unsatisfactory rating is still alive. Preparation and attention to detail and established standards result in a satisfactory rating.

You must still train to ARTEP standards and diligently prepare for the inspection. The TVI does not include everything previously inspected, but those areas that are covered are inspected with the same standards as before. The TVI is still probably the only inspection you will receive from a headquarters outside your own division or corps artillery, and it will be thorough, professional, and fair. It will be administered by people who have been there and understand your problems.

LTC A. O'Niel Crocker is assigned to Headquarters, Department of the Army, Office of the Inspector General. He recently completed a 4½-year assignment with the 8th Infantry Division Artillery in Baumholder, Germany, where he commanded the 1st Battalion, 83d Field Artillery.

notes from the units
RIGHT BY PIECE

8-inch for direct support

FORT HOOD, TX—The 1st Battalion, 21st Field Artillery, the general support battalion for the 1st Cavalry Division at Fort Hood, has embarked on a unique and challenging mission. As an 8-inch self-propelled battalion, they assumed the role of direct support to the 3d Brigade of the 1st Cav Div. This shift in mission was brought about by the inactivation of the 2d Battalion, 19th Field Artillery, the normal direct support 155-mm battalion of the 3d Brigade.

To fulfill its direct support mission, the 1-21st FA will be augmented with six fire support teams (FIST) and three fire support officer teams. Three of the FISTs will be configured to support armored battalions and three will be organized to support mechanized battalions.

For the record

To keep the record straight on "firsts" and "lasts," a correction is needed on the claim "last Honest John to be fired by the US Army." In the January-February 1979 *Journal* we reported that the 1st Battalion, 31st FA, fired the last HJ on 12 October 1978. It has now come to our attention that the 1-31st fired again in April 1979 in a two-rocket firing with a Korean unit at Chor Won, Korea. The firing was witnessed by Army Chief of Staff Bernard Rogers.

The 8-inch coverup

FORT HOOD, TX—An enterprising NCO in the 1st Cavalry Division Artillery has devised a system for camouflaging the M110A1 8-inch howitzer that other units may want to copy.

Staff Sergeant William Casey, assigned to the 1st Battalion, 21st Field Artillery, designed, built, and installed a rack for storing and transporting the nets required to camouflage the heavy howitzer. Casey's kit is modeled after the winterization kit for the M110 and solves the problem of continually having to manhandle the cumbersome nets.

The rack consists of an angle iron top with two camouflage poles. The rack is bolted to the trunnions in the front and secured to the camouflage poles in the rear. The camouflage pole on the gunner's side is clamped to the loader rammer lock, and the pole on the assistant gunner's side is attached to the power cable retainer.

Casey's design incorporates a dome light on the bottom of the rack which is powered by the collimator light source. The wire connecting the two runs along the trunnion. Also, chains have been affixed to the rack for securing the nets to the rack.

Units interested in more details should write to C Battery, 1st Battalion, 21st Field Artillery, Fort Hood, TX 76545. (CPT R. R. Parish)

SSG William Casey, designer of the 1-21st FA camouflage net carrying rack, points to the dome light which is an added feature of the rack. (Photo by SGT J. E. Strawder)

FA Vice Chief

WASHINGTON, DC—General John W. Vessey, an artilleryman with a long and distinguished military career, has been named as Vice Chief of Staff by President Carter.

General Vessey, who most recently served as Commander of all forces in Korea, replaces General Frederick J. Kroesen who now commands US Army Europe and Seventh Army.

A veteran of over 35 years service, General Vessey was a first sergeant when he received a battlefield commission in 1944 at Anzio beachhead, Italy.

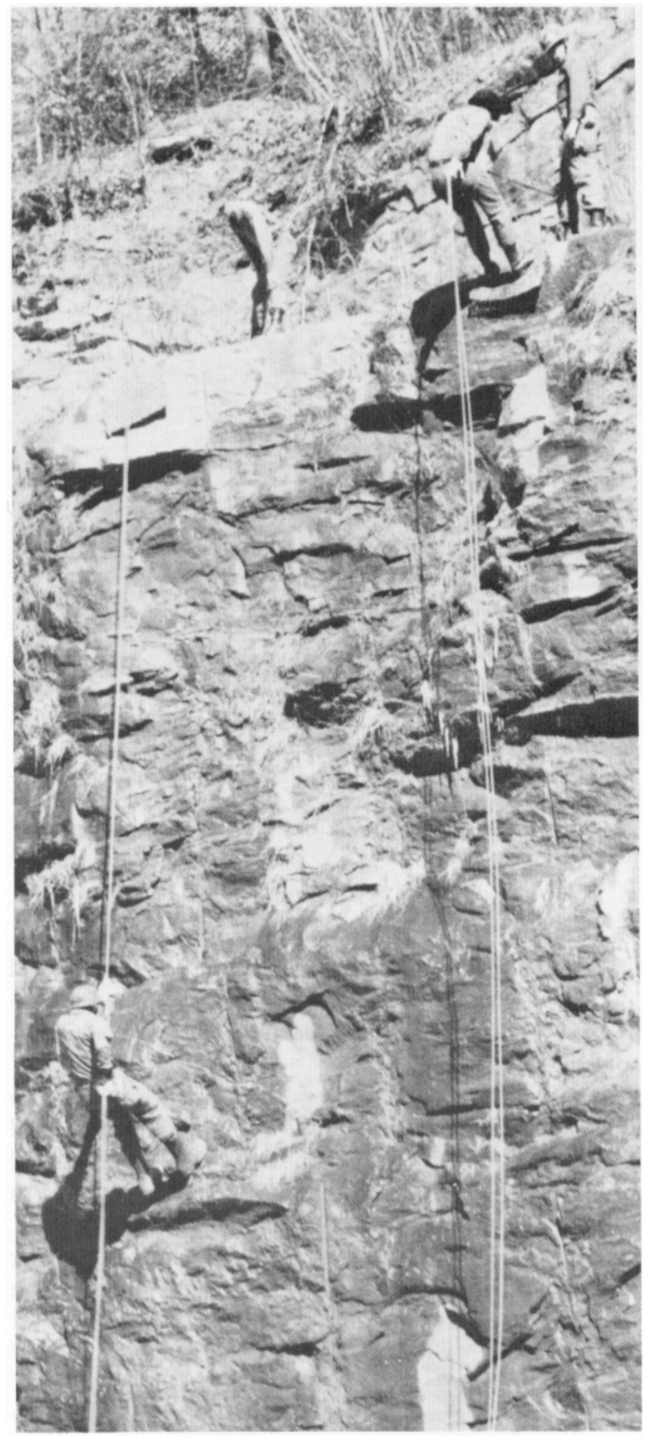
Previous field artillery assignments include battalion and division artillery command with the 3d Armored Division, US Army Europe.

Real adventure training!

DAHLONEGA, GA—CPT Jeffrey McCausland took his 24th Infantry Division Artillery battery to the mountains of north Georgia for some real adventure training—going through the mountain phase of Ranger School.

The troops spent a week learning all the military skills associated with operating in mountainous terrain such as rappelling down 60-foot cliffs, negotiating rope bridges, etc.

The battery got involved in the small unit tactics taught in Ranger School. They patrolled, established nuclear weapons field storage sites, and defended themselves against attacks by the students actually going through the full Ranger course. The training was so beneficial and enjoyable that the Fort Stewart battery (Battery D, 1st Battalion, 13th FA) plans to go back next year.



"On rappel!" (Photo by SP4 Mike Holtzhauser)

FORT KNOX, KY—COL John J. Yeosock, Commander of the 194th Armored Brigade, christens the brigade's first M109A1 self-propelled howitzer. The medium range weapon was presented to Battery C, 3d Battalion, 3d Field Artillery, for "outstanding performance" during battery evaluations. (Photo by SP4 Bob Miles)

Female Distinguished Graduate

FORT SILL, OK—Every cycle at the US Army Field Artillery Training Center has one distinguished graduate but none has had a female distinguished graduate—until now.

Alfa Battery, 6th Training Battalion, which had the first female One Station Unit Training graduate, added another first when PVT Jeannette T. Hanson graduated at the top of her 120-member class. "I did my best to compete in this man's Army and won," she said.

Private Hanson spent a college semester studying chemistry before entering the military in February. She points out that her reason for joining the Army was not for the job. "My MOS was secondary to my decision," she said. "The main thing was I wanted to be a soldier."

Hanson received a trophy and letters from the USAFATC and battalion commanders.

ADT for Guard FA

WASHINGTON, DC—Army National Guard Field Artillerymen will again undergo 15 days of annual active duty training. A schedule of units and place of summer camp for those training during the period July-September 1979 is as follows:

Date	Unit	Location
7-21 July 79	5-206th FA	Chaffee, AR
	1-144th FA	Irwin, CA
	3-144th FA	Irwin, CA
	2-104th FA	Drum, NY
	1-105th FA	Drum, NY
	1-187th FA	Drum, NY
	1-258th FA	Drum, NY
	1-171st FA (TA)	Sill, OK
	2-218th FA	Yakima, WA
	2-117th FA	Shelby, MS
	1-163d FA	Atterbury, IN
	1-108th FA	AP Hill, VA
	1-109th FA	AP Hill, VA
7-22 July 79	2-122d FA	Campbell, KY
	3-138th FA	Grayling, MI
	2-150th FA	Grayling, MI
	1-107th FA	Pickett, VA
13-29 July 79	1-623d FA	Hood, TX
21 Jul-4 Aug 79	1-160th FA	Chaffee, AR
27 Jul-12 Aug 79	2-130th FA	Guernsey, WY
28 Jul-11 Aug 79	1-487th FA	Pohakuloa Tng Area, HI
	1-127th FA	Riley, KS
	1-185th FA	McCoy, WI
	1-194th FA	McCoy, WI
	151st FA Bde	Stewart, GA
	3-178th FA	Stewart, GA
	4-178th FA	Stewart, GA
29 Jul-13 Aug 79	3-115th FA	Shelby, MS
4-18 Aug 79	1-156th FA	Drum, NY
	1-209th FA	Drum, NY
	45th FA Bde HHB	Chaffee, AR
	1-189th FA	Chaffee, AR
4-19 Aug 79	2-110th FA	Drum, NY
11-25 Aug 79	1-117th FA	Shelby, MS
	1-152d FA	Gagetoen, CFB, Canada
	2-123d FA	McCoy, WI
11-26 Aug 79	135th FA Bde HHB	McCoy, WI
	1-128th FA	McCoy, WI
19 Aug-2 Sep 79	3-112th FA	Drum, NY
	4-112th FA	Drum, NY

Persistence—professionalism

PHILIPPSBURG, GERMANY—How do you prepare howitzer crewmen for their Skill Qualification Tests (SQT) when you don't have any howitzers? By determination, persistence, and effort.

The 3d Artillery Detachment, a custodial unit of the 59th Ordnance Brigade, has 35 cannoneers (MOS 13B) but no weapons. Some of their personnel had not seen a howitzer for three years. The detachment commander and his first sergeant began looking for a nearby artillery unit so their cannoneers could borrow a weapon for reviewing the hands-on component of the SQT. There were German self-propelled 155-mm howitzers nearby, but the German weapons had significant differences, such as fire control equipment and breechblock mechanisms. After two months, many miles of recon, and scores of phone calls, the unit commander discovered that the 1st Combat Equipment Company was located in nearby Mannheim. The 1st CEC is one of the units that maintains stockpiled materiel for units that will fly to Europe in the event war begins.

Personnel of the 1st CEC were most cooperative, and a series of nine intensive training days were arranged. The cannonless cannoneers were excited about getting back on the guns and made full use of the limited training time.

When SQT day came, the efforts of all concerned were rewarded by 82 percent of the 13Bs earning passing scores—this would be an enviable record for a unit with a full TOE. The spirit and persistence are a tribute to those involved and typical of the professionalism of the Artillery. (CPT J. Styron and SFC K. Diehl)

Firepower exercise held at Campbell

FORT CAMPBELL, KY—Division Artillery of the 101st Airborne Division (Air Assault) teamed with several Reserve Component units in "Thundering Eagle", a three-day exercise involving precision gunnery, fire coordination, and mobility training.

The 101st Division Artillery's three 105-mm battalions were joined by the 2d Battalion, 31st FA (Campbell-based 155-mm towed); the 5th Battalion, 28th FA, and the 3d Battalion, 92d FA, from Ohio; 4.2-inch mortars from post units; A-10 and A-7 fighter aircraft from Active and National Guard air units; a tank battalion; and Cobra helicopters.

Coordination of the fires of all these units was a major goal of the live fire training exercise. Included in the training were battalion-size airmobile moves and direct fire by the howitzers. The air units dropped 500-pound bombs, and the helicopters fired TOW missiles at simulated enemy armor.

Exercise "Thundering Eagle" provided these cannoneers of the 2d Battalion, 31st FA, a rare opportunity to employ their 155-mm towed howitzers in the direct fire role. (Photo by Tom Morris)

Integrated Fire Training Exercise

by CPT James E. Lyon

Studies and war games are being conducted in Europe to analyze the nature of the battlefield, but I Corps Artillery, Republic of Korea Army, has developed a realistic and ambitious exercise accomplishing the same objectives in a Korean scenario.

I Corps Artillery conducted its second annual fire support training exercise in December 1978. The primary purpose of the training exercise was to familiarize all fire support personnel with target information flow processing. Two months of planning and preparation were culminated in the two-day exercise. The problem scenario, played in real time, lasted 13 hours and consisted of eight phases.

Training objectives (selected because improvement was needed based on previous training exercises and CPXs) were to:

- Integrate forward observers (FO) and aerial observers (AO) into the exercise.
- Position and maneuver units more realistically, considering actual terrain.
- Consider the FO's and forward rifleman's visibility with respect to the terrain when locating targets.
- Provide a continuous, fast moving scenario.
- Train fire support personnel in target analysis and in preparing estimates of the situation, based on small-scale targets.
- Use *all* fire support means for massing and distribution of fires.

The first training objective was met by grouping the FOs by division. They were seated in the same order (laterally) as they would be located on the battlefield. All other artillery and fire support agencies were in separate locations inside and outside two large buildings.

The second and third training objectives were achieved at the controller/FO level. The initial planning of the enemy attack took into consideration the physical characteristics of the terrain and the types of units in the scenario. Enemy elements traversed and occupied terrain as dictated by enemy doctrine and the actual terrain.

Target input by the control team was in two forms. The primary means was a target overlay given to the FO/AO, pointing out a target within the observer's visibility diagram, giving its nature, size, and posture. The second means was a spot report from maneuver personnel to appropriate fire support agencies.

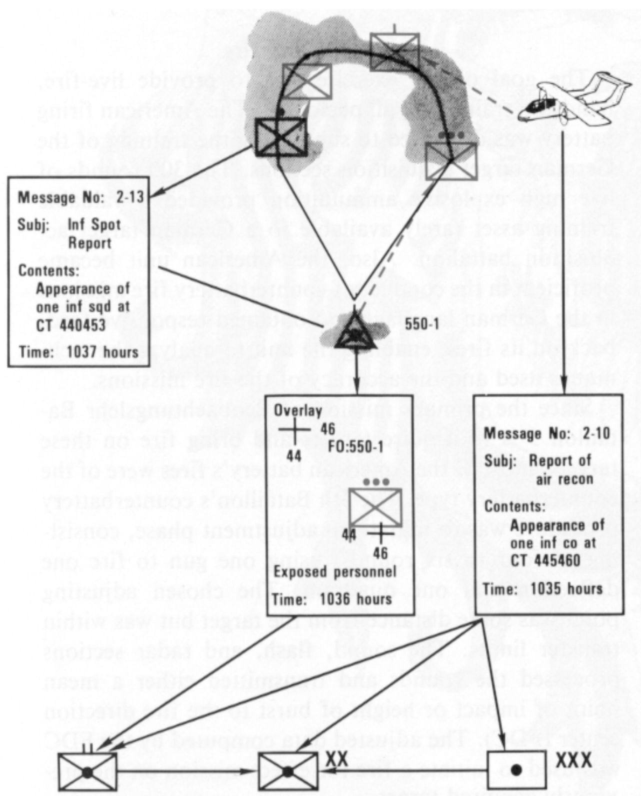
Each acquisition source was provided only targets in the size and location which the source would actually see on the battlefield. For example, FOs could not see over or around hills or through dense wooded areas, nor did they see more than a few soldiers or tanks at any one time (figure 1).

A controller with each division provided the FO, fire support officer, or fire support element (FSE) with target input based on a schedule. In this way, smaller elements of a realistically sized and positioned target were identified almost continuously by the source which would actually acquire them on the battlefield, thereby achieving the fourth training objective.

The fifth and sixth objectives were met at all the fire support levels after the FO/AO or maneuver unit requested fire support from the appropriate firing element (infantry mortars, direct support (DS) artillery, or tactical air). When the firing elements or their associated coordinating agencies monitored two or more calls for fire or spot reports in a short period of time (1 to 3 minutes), the S2/G2 target production personnel noted the location, size, nature, and posture of the smaller targets (a few soldiers and/or tanks). Then, using templating techniques, larger units could be postulated and engaged with more or heavier fire support systems. For example, combat support company 4.2-inch mortars might be requested initially to fire on an infantry squad; but, when this target is considered in conjunction with other calls for fire or spot reports, the S2 might see this as a reinforced platoon or company and recommend massing the fires of several batteries. This same technique was used from DS battalion through corps artillery to facilitate the massing of fire and engagement of more lucrative targets by several fire support systems.

The magnitude of this training exercise can be appreciated by noting a few of the "gee whiz" facts. Involved in the exercise were the FOs, battalion FDCs, maneuver fire support sections, division artillery FSEs, elements of the direct air support centers (DASC), division and corps general support (GS) and general support reinforcing (GSR) battalions, corps artillery FSE, and two battalions of the US 2d Infantry Division Artillery. There were 324 officers and 252 enlisted players. The controllers introduced 1,428 message type targets and 1,563 overlay targets into the exercise. These resulted in the following missions being fired:

Div arty time on target (TOT):	**162**
Corps arty TOT:	**38**
Immediate fire:	**804**
Close air support sorties:	**267**
Close support:	**264**
Total missions fired:	**1,535**



Note: Dashed line represents actual observer visibility.

Figure 1. Target information input (targets based on terrain and visibility).

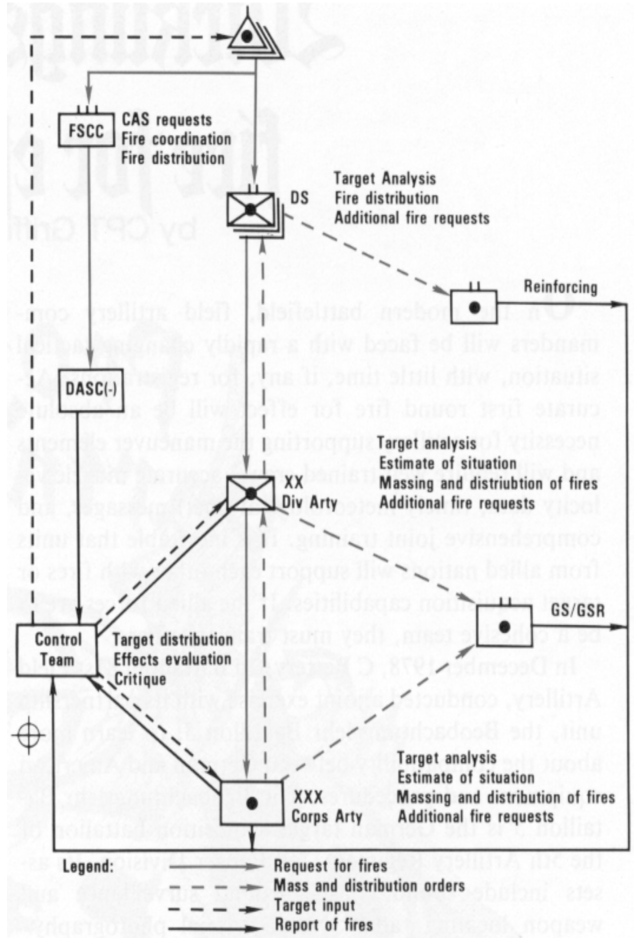


Figure 2. Exercise flow diagram.

Wire was the primary means of communications with radios as an alternate. The flow of target information (figure 2) was standard, with the exception that each fire support agency provided the control team a record of its missions fired, which was later compared to the target input by the control team.

I Corps is located in the northwest portion of the Republic of Korea, along the demilitarized zone. I Corps, along with V and VI Corps of the Republic of Korea Army, is under the operational control of I Corps (ROK/US) Group, commanded by LTG M. C. Ross.

I Corps Artillery plans to expand the exercise next year to include maneuver target production elements.

CPT James E. Lyon is the operations officer on the I Corps (ROK/US) Group Artillery Staff in the Republic of Korea.

Wirkungsschiessen fire for effect

by CPT Griffith T. Lewis

On the modern battlefield, field artillery commanders will be faced with a rapidly changing tactical situation, with little time, if any, for registrations. Accurate first round fire for effect will be an absolute necessity for artillery supporting the maneuver elements and will require well-trained crews, accurate muzzle velocity data, timely meteorological (met) messages, and comprehensive joint training. It is inevitable that units from allied nations will support each other with fires or target acquisition capabilities. If the allied forces are to be a cohesive team, they must train together.

In December 1978, C Battery, 2d Battalion, 81st Field Artillery, conducted a joint exercise with its partnership unit, the Beobachtungslehr Bataillon 5, to learn more about the compatibility between German and American equipment and procedures. The Beobachtungslehr Bataillon 5 is the German target acquisition battalion of the 5th Artillery Regiment, 5th Panzer Division. Its assets include sound, flash, ground surveillance and weapon locating radar systems, aerial photography/reconnaissance with drones, and meteorological data elements.

The joint exercise was conducted at the Munster Lager north of Hannover, Germany, 600 kilometers from the units' duty stations.

Planning

LTC Charles O. Haines, Commander of the 2d Battalion, 81st Field Artillery, had volunteered 300 rounds of HE ammunition, when he and LTC Folka Schiller, Commander of Beobachtungslehr Bataillon 5, were planning the exercise. Battery C was to be in an attached status, with the German commander taking complete responsibility for the battery, less Class IX supplies (repair parts, etc.), just as would be the case during wartime. Lieutenant Colonel Haines had determined that he could meet the cost of the rail movement of the howitzers, M548s, and a VTR by reducing the number of Goer vehicles he would send to Grafenwoehr later in the fiscal year. The German unit was to furnish the Class I and Class III supplies. All materiel peculiar to US equipment, such as repair parts, was carried by the American battery. Other items and major assemblies not available, such as an M109A1 engine and recuperator seals, were obtained from the home station, as needed. The direct support maintenance contact team, which normally supports an entire battalion, also participated in the exercise.

Daily rations provided by the German unit created a minor problem as the American soldiers had some difficulty adjusting to menus of pea soup, various meats (such as wursts), tea, and bread for breakfast and dinner. However, after supplementing the meals with a minimal amount of American B-rations (coffee and dried soup) the men fared quite well.

Another minor concern was safety requirements which varied drastically from normal procedure at the home station (Baumholder) and the Grafenwoehr training area. Fortunately, the Munster Range Control provided books, in English, which outlined requirements in detail.

Counterbattery fire

The goal of the exercise was to provide live-fire, hands-on training to all personnel. The American firing battery was dedicated to supporting the training of the German target acquisition sections. The 300 rounds of live high explosive ammunition provided a valuable training asset rarely available to a German target acquisition battalion. Also, the American unit became proficient in the conduct of counterbattery fire missions in the German language and obtained responsive feedback on its fires, enabling the unit to analyze the techniques used and the accuracy of the fire missions.

Since the primary mission of Beobachtungslehr Bataillon 5 is to acquire targets and bring fire on these targets, most of the American battery's fires were of the counterbattery type. The 5th Bataillon's counterbattery procedure was to initiate an adjustment phase, consisting of four to six rounds, using one gun to fire one deflection and one quadrant. The chosen adjusting point was some distance from the target but was within transfer limits. The sound, flash, and radar sections processed the rounds and transmitted either a mean point of impact or height of burst to the fire direction center (FDC). The adjusted data computed by the FDC was used to initiate a fire for effect mission on the previously acquired target.

The adjustment phase, dubed by C Battery FDC as a "mini-registration," is not an efficient use of ammunition in a combat environment, but it does add an element of surprise versus a radar or a sound adjustment. The mini-registration may be an effective means of obtaining accurate data for special munitions, such as the ICM, when a limited supply of rounds does not allow for a complete registration or when velocity error (VE) data are not available for the munitions combination being used.

Most artillerymen agree that the ideal situation is to fire for effect on an acquired target without adjustment. This minimizes the chance of enemy counterbattery operations and maximizes the element of surprise. However, there is disagreement on the procedures to achieve this goal. FM 6-40, Field Artillery Cannon Gunnery, and FM 6-40-5, Modern Battlefield Cannon Gunnery, explain the procedures used when a FADAC is available, but do not explain clearly the manual techniques for conventional munitions. The implied procedure is a modification of the subsequent met data using met plus VE corrections.

Subsequent met method

The subsequent met method requires a previous registration to derive the position corrections. FM 6-40 states ". . . position VE and position fuze corrections are virtually constant." In the modified subsequent met method, it is assumed that position corrections are zero since no registration has been conducted.

To compute initial round met plus VE data, the following information is needed: a powder temperature, a recent met message, the azimuth of fire to the center of sector, the projectile weight, the range to a met check gage point on the target (entry range), and historical VE data. If historical VE data are not available for a specific charge or howitzer, assume the VE to be zero. It is assumed that the target is within transfer limits so that variations in the azimuth of fire with respect to the direction of the wind will have no effect.

1) Deflection: MET DF CORR + POS DF CORR = TOTAL DF CORR.

a) The position deflection correction is assumed to be zero. Therefore, MET DF CORR = TOTAL DF CORR.

b) The met deflection correction is a function of wind direction and range: MET DF CORR = ROTATION CORR + CROSS WIND CORR + DRIFT.

c) Since the target is within transfer limits, the rotation correction and cross wind correction are constant: ROTATION CORR + CROSS WIND CORR = CONSTANT.

d) To compute a total deflection correction for a specific target, add the met deflection correction to the drift corresponding to the adjusted elevation: TOTAL DF CORR = CONSTANT + DRIFT.

2) Range and quadrant: Δ V RG CORR = MV UNIT CORR X (ΔV for TEMP + VE).

a) The VE is either the historical VE or zero if no historical VE data are available: TOTAL RG CORR = MET RG CORR +Δ V RG CORR.

b) This total range correction is added to the entry range (range to the met check gage point) to obtain a met adjusted range. The elevation corresponding to the met adjusted range is the adjusted elevation for the GFT setting. (Place the manufacturer's hairline over the entry range and then construct the elevation gageline as usual.)

A comparison was made between the met plus VE initial data fired by C Battery and the data obtained from the mini-registration. In most situations, the data were within usable limits; i.e., within 10 mils in deflection and 100 meters in range. However, several times the position corrections were quite large, in some cases 35 to 40 mils. In such cases the assumptions above no longer hold true and a registration must be conducted.

Note: The US artillery is probably very wise in its decision not to follow our allies and go to a winds aloft only met. Met support provided by the 5th Bataillon was the winds aloft type which does not include temperature and density data, certainly a factor in the larger than expected position corrections. The 5th Bataillon's use of the mini-registration technique may also be related to the shortcomings in their meteorological data production system.

Conclusion

The exercise conducted by C Battery with the 5th Bataillon raised two specific areas requiring further emphasis. First, there is a great deal to be gained through the conduct of joint operators with allied forces. These exercises should not be simply "goodwill" ventures, but should be organized exercises to cross-train units and personnel on each other's equipment and procedures and they should reflect our concern through our allocation of appropriate resources (ammunition, rail funds, POL, etc.). Secondly, additional emphasis and information must be provided on both the computer and manual procedures for the computation of accurate first round met plus VE fire for effect data where no registration is conducted. These two areas can lead the way to full effectiveness of field artillery on the modern battlefield.

In all, the difficulties were minor when compared with lessons learned and benefits received from successful interaction between the German and American units.

The new FM 6-40 supersedes FM 6-40 (Jun 74) and FM 6-40-5 (Jul 76).—Ed.

CPT Griffith T. Lewis is assigned to the Doctrine Team, Directorate of Combat Developments, USAFAS.

with our comrades in arms

REMBASS still alive

When an obituary for Mark Twain erroneously appeared in a newspaper, the humorist was reported to have said, "The report of my death is exaggerated." The same is true for reports (in this Journal and other media) of the death of the Army's Remotely Monitored Battlefield Sensor System (REMBASS).

The remote sensor program began during the Vietnam war years to detect sappers and border infiltration attempts. Tight budgets and other priorities almost killed the project. Now, the Army has decided to continue development of the unattended ground sensor system, hoping to field REMBASS in 1985. A portion of the REMBASS sensors will be artillery-deliverable (*FA Journal*, January-February 1977).

Tests are to be conducted later this year, and Training and Doctrine Command will reevaluate its plans for integrating REMBASS into the Army's overall intelligence network. The Marine Corps plans to adapt REMBASS technology to its needs.

A-10s arrive ahead of schedule

Fourteen A-10 Thunderbolt aircraft have arrived in Europe six months ahead of schedule, according to *Business Week* magazine. The planes are designed to bolster the Air Force's close air support capability to kill tanks.

The 81st Tactical Fighter Wing at Bentwaters, England, received the aircraft built by Fairchild. General John W. Pauly, Commander of Allied Air Forces Central Europe, accepted delivery of the planes and called the Thunderbolts "another giant step" in modernizing the aircraft in Central Europe.

The A-10s will rotate through forward bases on the continent, returning to their permanent base at Bentwaters.

Pathfinder Course reopens

The Airborne Department's Pathfinder Branch at Ft. Benning will begin regular class training October 14th following its closure in 1978 due to cuts in funding.

The three week course centers on teaching the use and control of Army helicopters and Air Force Caribous for troop/cargo drops as well as directing tactical supporting fire from aircraft and artillery. Students of each 36 man class must be airborne qualified.

(Photo courtesy of *The Bayonet*, Fort Benning, GA)

Chemical protective suit. (Photo by SP Jeff Behuniak)

Riley gets CBR suits

The 1st Infantry Division at Fort Riley, KS, has received 17,000 chemical and biological protective suits to use in training. The five-piece outfits differ from the type suit to be used in combat in that they lack the chemical-absorbing charcoal of the combat model.

The division was issued the training suits to encourage commanders to have their units use and get acclimated to the hot, bulky suit.

The Ft. Riley Post quotes the director of the Riley NBC office as saying that units are not employing the suit frequently enough because of other priority training requirements, even though Soviet military doctrine calls for liberal use of toxic chemicals.

Approval granted for XM1 production

The Army was given Defense Department approval for initial production of 110 XM1 tanks beginning the end of May. Full scale production will not begin until engine and transmission problems discovered in prototype models have been corrected.

The decision to go into limited production will cost the Army an additional 100 to 200 million dollars. Full scale production should begin by February 1981, with the first of the 7,000 tanks the Army plans to purchase reaching the field later that year.

New mine detector system

The Mobility Equipment Research and Development Command has awarded a $2.3 million contract for engineering development of the Vehicle Mounted Road Mine Detector System (VMRMDS).

VMRMDS represents a major technological breakthrough because it is the only system that can reliably detect both metallic and plastic land mines with a very low false alarm rate. Using sophisticated microwave and microprocessor techniques, the system locates buried mines through a special device that can be mounted on any standard Army vehicle. When the system detects a buried mine, an alarm is sounded and a visual display pinpoints its exact location. The VMRMDS can clear a path up to 11 feet wide at eight miles an hour over unpaved roads or flat, sparsely vegetated terrain.

Eight units will be produced for testing under this initial contract, with the first system set to arrive in January 1980.

Recommended Reading

Volume 12, No. 2/1979, *International Defense Review*, has a super four-page article on a new German-designed fire support combat vehicle. The weapon is a modified M113A1 mounting a *105-mm* gun! The same issue has a detailed article on the millimeter wave technology which the Field Artillery hopes to use in future munitions guidance systems.

In the March 1979 issue of *Aviation Digest*, COL James McCarthy, ex-25th Infantry Division Artillery Commander, echoes the arguments which he made in the November-December 1978 *FA Journal* for retaining the div arty aviation section.

The Spring 1979 issue of *the Army Communicator* contains the first installment of a two-part article on a controversial and, until recently, classified subject—electromagnetic pulse. EMP is the phenomena associated with nuclear detonations that can destroy field communications and normal electrical power operations.

in the Soldier's Manual

by CPT(P) Skip Hawthorne

Recent studies by the Field Artillery Community concerning the current design of our individual training and evaluation program have determined a need for improvements. In an effort to thoroughly evaluate one such improvement, TRADOC recently approved a USAFAS proposed pilot program which is evaluating the concept of placing hands-on and written components in the Soldier's Manual—in other words, putting the SQT in the Soldier's Manual.

Background

A "train-to-test" philosophy requires *tests*, not the objectives and procedures currently included in our Soldiers' Manuals. For example, if a section chief decided to train and evaluate a soldier, using the Training and Evaluation Outline (TEO) shown in figure 1, he would have to determine which of the training procedures should be graded as performance measures, how many performance measures would have to be passed before the soldier could be scored GO on the task, and how to set up the test site. Certainly, any two section chiefs could select different performance measures and test site setups. This means that training and evaluation using TEOs in their current format cannot be conducted in a standardized manner.

The present TEO does not inform the tested soldier how he (she) will be graded on the task, how the test site will be prepared, and how the test will be conducted. Essentially, each section chief and soldier that trains with a Soldier's Manual Training and Evaluation Outline "guesses" how the task might be tested on an SQT. Some guess better than others.

Currently, the only document that eliminates guesswork and facilitates training to test is the SQT Notice which is received approximately 60 days before test administration. The Notice prompts an increase in training activity and individual proficiency which continues until the test and drops off immediately thereafter. Since SQTs are biannual, it follows that our soldiers are becoming proficient at the same interval. As a matter of priority, our efforts should focus on what can be done to close this proficiency gap.

What we can do now is make NCO-conducted, individual training and evaluation more efficient and effective by giving the sergeant supervisor the test to train with rather than objectives and procedures. Some commanders have already recognized this need and have expanded considerable energy and effort writing their own tests from Soldier's Manual objectives. Unfortunately, many of these are inaccurate and inconsistent. Certainly, they are not standardized.

What if we put the SQT in the Soldier's Manual?

The "SQT in the Soldier's Manual" Program will make training more efficient and effective by providing standardized tests. It replaces the "training" portion of each Soldier's Manual TEO (figure 1) with a hands-on component (HOC) scoresheet and a written component (WC) scorable unit consisting of two or more performance-oriented questions/problems. The HOC scoresheet will contain pass-fail performance measures and standards for a GO/NO-GO determination. The written component will include either questions or problems with choices of answers. The correct answer to each WC will be indicated in the Soldier's Manual. An example of a training and evaluation outline as it will appear when the new program is implemented is shown in figure 2. Compare it to the current format for the same task in figure 1.

The "new" Soldier's Manual will be accompanied by a revised Commander's Manual. The latter will have additional annexes which provide specific instructions to the trainer for setting up, administering and scoring the HOC. Both manuals will indicate that the HOCs and WCs for the next SQT will be selected directly from the Soldier's Manual. Success in training on Soldier's Manual tests will facilitate success on the SQT.

Administering the test

The SQT/SM program will also permit some refinements in the administration system.

Sixty days before the SQT, a message, rather than an SQT Notice, will be sent to the field, indicating which Soldier's Manual tasks will be included in the HOC and which will be in the WC. As currently practiced, the HOC will be conducted by the Test Control Officer (or decentralized to any level eventually permitted). The WC will be administered in much the same way as it is

061-93F-4267 TRAINING AND EVALUATION OUTLINE FM 6-93F1/2

TASK

MAINTAIN BASELINE CHECK SET HUMIDITY WITHIN ALLOWABLE LIMITS

EVALUATION

CONDITIONS:

You are to maintain humidity inside the check set within allowable limits. You are provided an operational baseline check set. This task will be performed in a field environment in a sheltered area.

STANDARDS:

1. Maintain humidity within the baseline between 20 and 70 percent.

2. Temperature in the baseline must be 0° or above.

3. You have 10 minutes to complete this task.

TRAINING

1. Insure that the psychrometer is in position, the water receptacle is full, and the wet bulb wick is clean and reaches into the water receptacle at least 1 inch.

2. Close the door on the baseline check set. Turn on the fan. Observe the reading on the wet bulb thermometer.

3. Allow sufficient time for the atmosphere within the baseline check set to stabilize. The atmosphere is stable when the readings of both the wet and dry bulb thermometers remain constant.

4. Using the readings obtained from the psychrometer, enter Chart VIII, in FM 6-16, to determine relative humidity. This chart is entered by using the dry bulb temperature and the depression of the wet bulb.

5. Humidity between 20 and 70 percent is within limits. If the humidity is not within the limits, proceed as follows:

   a. If the humidity is too low (less than 20 percent): Turn off the fan. Open the baseline check set door. Remove the water tray. Fill the tray with water. Place it in the set. Close the door and turn on the fan. Allow the baseline check set to stabilize. Read the psychrometer and compute relatively humidity.

   b. If relative humidity is too high in the baseline check set: Turn off the fan. Open the door. Remove the water tray. Add approximately 4 ounces of dry calcium chloride to the tray and return to the set. Close the door. Turn on the fan. Allow the check set to stabilize. Read the psychrometer and compute relative humidity.

Figure 1. Current Training and Evaluation Outline.

061-303-1006

PREPARE BASELINE CHECK SET FOR OPERATION

CONDITIONS:

You will be provided with calcium chloride, water, FM 6-16, and an assembled baseline check set with a radiosonde installed. Electrical power will be available to the set.

STANDARDS:

1. The atmosphere within the baseline check set chamber must be stable (temperature remains constant).
2. The relative humidity within the chamber must be between 20 and 70 percent.

HANDS-ON COMPONENT

PERFORMANCE MEASURES (Sequence is not scored.)	PASS	FAIL
1. Insures that psychrometer wick reaches into water before securing chamber door.	____	____
2. Moves POWER switch to the ON position.	____	____
3. Moves FAN switch to the ON position.	____	____
4. Checks the stability of the atmosphere within the chamber by reading and recording the temperature at approximately 5 minute intervals. (Time spent waiting for atmosphere to stabilize will not count against examinee's time.)	____	____
5. Determines that the atmosphere within the chamber is stable when temperature readings remain constant.	____	____
6. Reads and records the psychrometer's wet and dry bulb temperature to the nearest 0.1 C.	____	____
7. Determines and records the percent of relative humidity within the chamber.	____	____
8. Insures that relative humidity is within limits (20% to 70%). When humidity is outside limits, adds water or calcium chloride to chamber's tray as appropriate.	____	____
9. Completes task within 10 minutes. (Does not include waiting time for atmosphere to stabilize.)	____	____

STANDARDS: The examinee is scored GO if he passes all of the performance measures. The examinee is scored NO-GO if he fails any of the performance measures. If the examinee receives a NO-GO, tell him why and record on the scoresheet any additional information required to show the cause of the NO-GO.	GO	NO-GO
	☐	☐

REASON(S) FOR NO-GO (indicate, by number, the performance measure(s) failed and give a brief explanation): ______________________________

____

____

____
SCORER'S SIGNATURE

Figure 2. The training and evaluation outline as it will appear in the Soldier's Manual.

WRITTEN COMPONENT

SITUATION. You are preparing the baseline check set for operation inside the met operations tent. The day is clear and sunny and the temperature is 80º F.

001. When preparing the baseline check set for operation, the psychrometer wick must be

A. dry, clean and secured to the thermometer
B. dipped in water before being secured to the thermometer
C. secured to the thermometer and reaching into the water filled cup

002. Refer to figure 1006-1. What is the temperature reading?

A. 26.0° C
B. 26.4° C
C. 33.0° C
D. 33.6° C

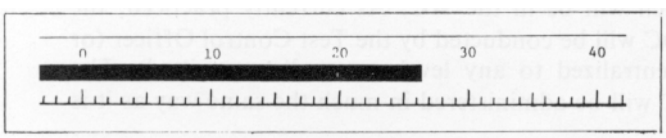


Figure 1006-1

003. Refer to figure 1006-2. Which control panel shows the proper positioning of switches for the baseline?

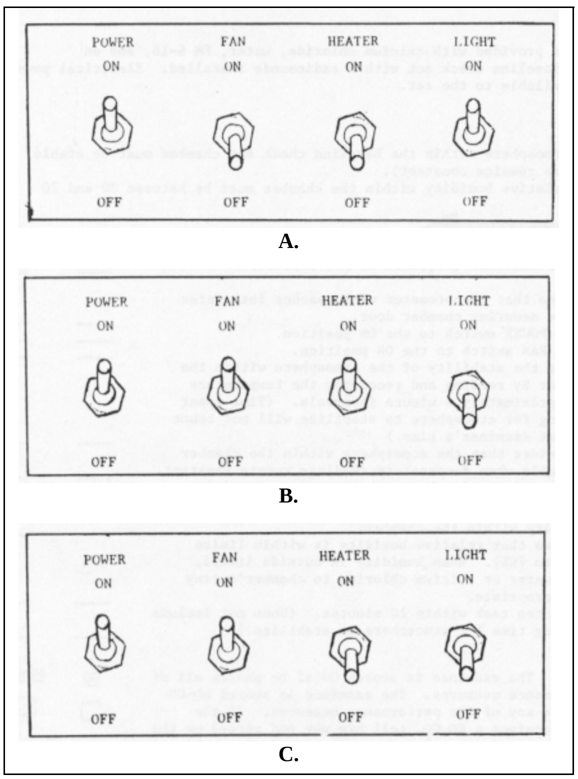


Figure 1006-2

2-4

004. Refer to figure 1006-3. When the dry bulb reading is 18.8 C and the wet bulb reading is 9.2 C, the relative humidity is

A. 22%
B. 25%
C. 28%
D. 31%

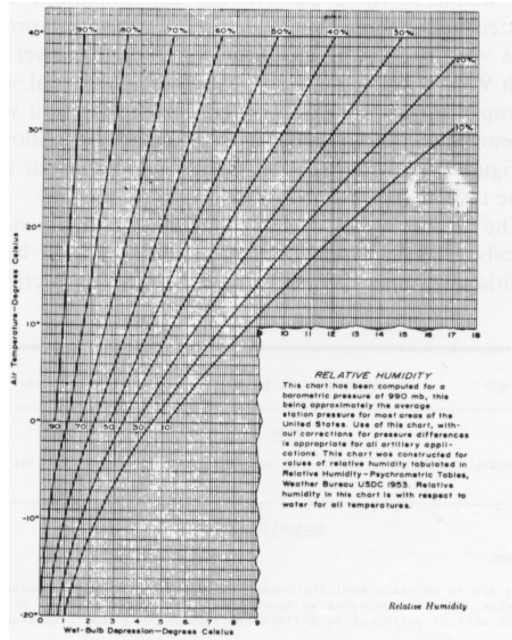


Figure 1006-3

2-5

005. The atmosphere inside the baseline check is considered stable when the wet and dry bulb readings

A. increase
B. decrease
C. remain constant
D. are identical
E. are different

006. Which action should you take when the humidity within the baseline check set is 75%?

A. place water in the set's tray
B. place calcium chloride in the set's tray
C. turn on the set's heater
D. continue with the baseline check

007. Which action should you take when the humidity within the baseline check set is 25%?

A. place water in the set's tray
B. place calcium chloride in the set's tray
C. turn on the set's heater
D. continue with the baseline check

REFERENCES:
FM 6-15, Arty Met, Chap 4, Para 4-5
FM 6-16, Tables for Arty Met, Chart IIX
TM 11-6660-219-12, Baseline Check Set, Chap 3, Para 23

Figure 2—*continued.*

The way it will look in the new manual:	The way it may look on the SQT:
a. Performance Question Refer to figure (pressure calibration chart). When the surface pressure is 1000 millibars, the surface contact number is: A. 5.6 B. 5.7 C. 5.8 D. 5.9	Refer to figure (pressure calibration chart). When the surface pressure is 987 millibars, the surface contact number is: A. 6.6 B. 6.7 C. 6.8 D. 6.9
b. Performance-Based Question Which action should you take when the humidity within the baseline check set is 75%? A. place water in the set's tray B. place calcium chloride in the set's tray C. turn on the set's heater D. continue with the baseline check	Which action should you take when the humidity within the baseline check set is 75%? A. turn on the set's heater B. place water in the set's tray C. continue with the baseline check D. place calcium chloride in the set's tray

Figure 3. Sample questions.

now, however with different test tools to reduce SQT compromise and permit decentralized administration. When the soldier takes the test, he (she) will be issued one of four alternative versions of the same SQT. Each test will contain questions extracted directly from the Soldier's Manual; however, the choices of answers will be scrambled for each question and the numbers changed for each problem. Figure 3 shows how we anticipate doing this.

A new "sandwich" type mark-sense answer form with three opaque pages will allow the soldier to determine his score immediately after taking the test. The first page is the record copy for centralized grading and processing. The second page, a carbon copy of the first, will be given to the soldier as he leaves the test site. The soldier will be able to determine his score by comparing his responses to the correct answers shown on his copy of the test solution sheet. The solution sheet, provided separately by the TCO, will be keyed to each version of the test and contain the task/item reference in the Soldier's Manual for each question. The third page of the mark-sense form, also a carbon, is returned to the trainer so that retraining can begin immediately to correct identified deficiencies.

Benefits

It is anticipated that there will be a greater incentive for sergeants and commanders to use the new manuals for year-round individual training much like the collectively oriented ARTEP. For example, a sergeant will be able to design his own "individual proficiency evaluation," by selecting test items from the new Soldier's Manual. In this way, individual training can be conducted to correct identified deficiencies rather than wasting time training soldiers on something they can already do. Similar tests can be used for Soldier of the Month awards and promotion boards.

The new manuals will permit major commanders to nominate tasks for inclusion in the next SQT, based on unit recommendations. This will reduce the number of HOCs that are currently being scored "not observed" because equipment is not available.

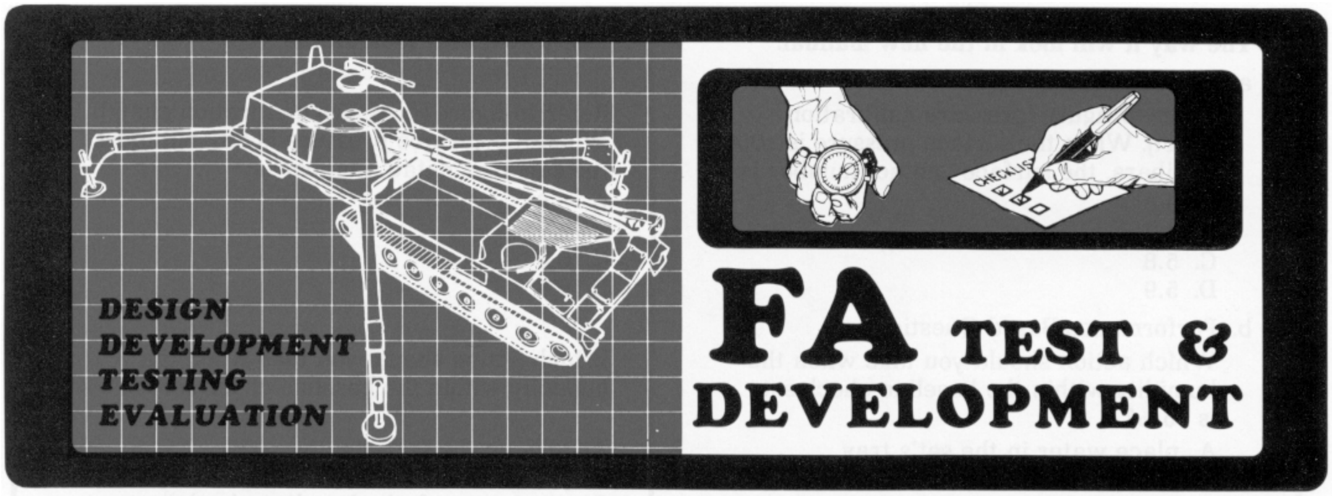
The quality of the SQT will be improved because errors in any of the test items discovered prior to the SQT can be relayed to test developers at the Directorate of Training Developments, USAFAS via the Redleg Hotline.

By exposing our soldiers more frequently to valid, demanding tests, we have the opportunity to increase individual proficiency and force effectiveness.

Conclusion

The SQT in the Soldier's Manual Pilot Program, using MOS 93F (Meteorological) Skill Levels 1 and 2, is designed to document the procedures involved for the remainder of the Field Artillery MOS and for other TRADOC schools. The redesigned 93F Soldier's Manual will be distributed to soldiers in 1980.

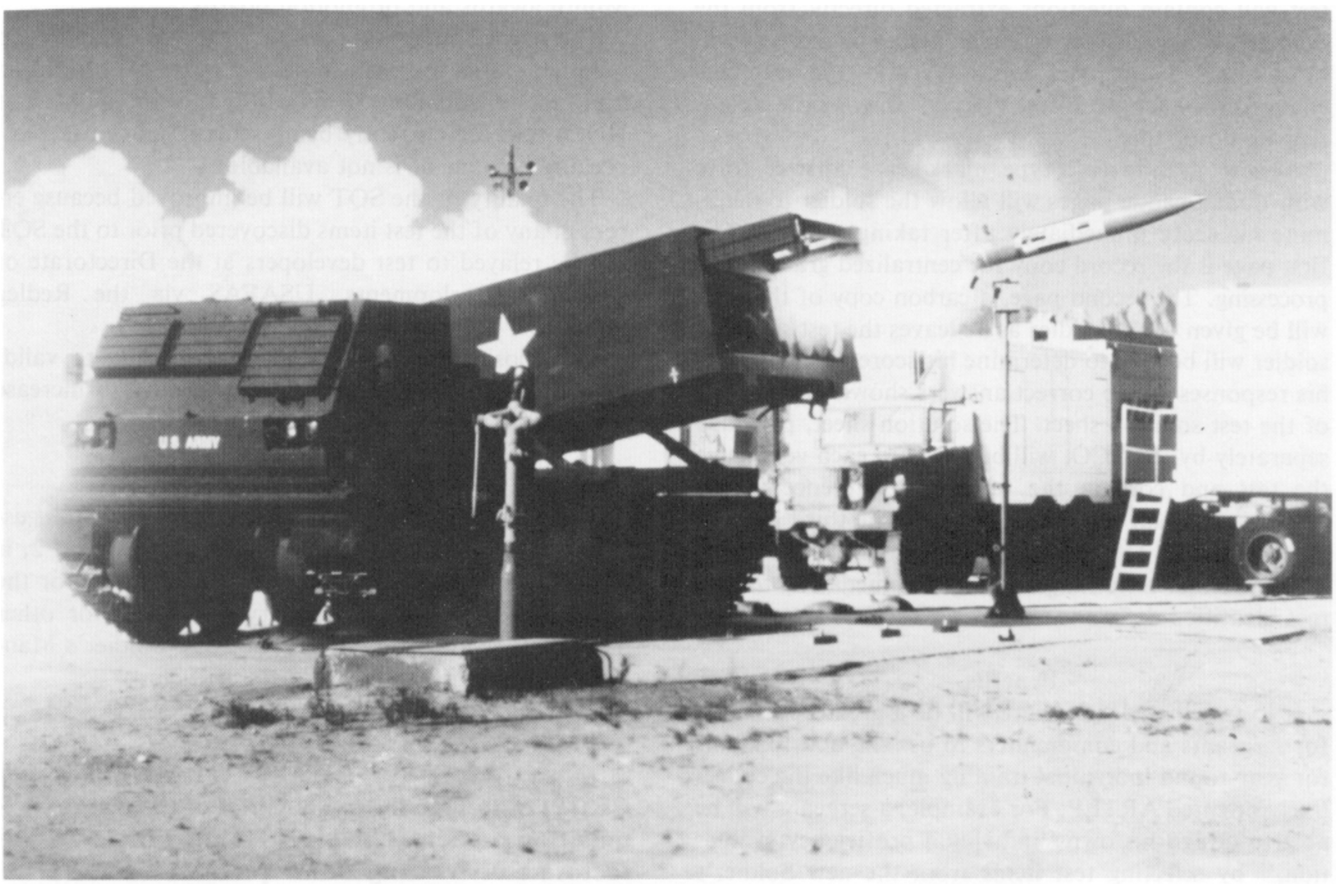
CPT(P) Skip Hawthorne is Chief of the Target Acquisition Branch, Individual Training Division, Directorate of Training Developments, USAFAS.

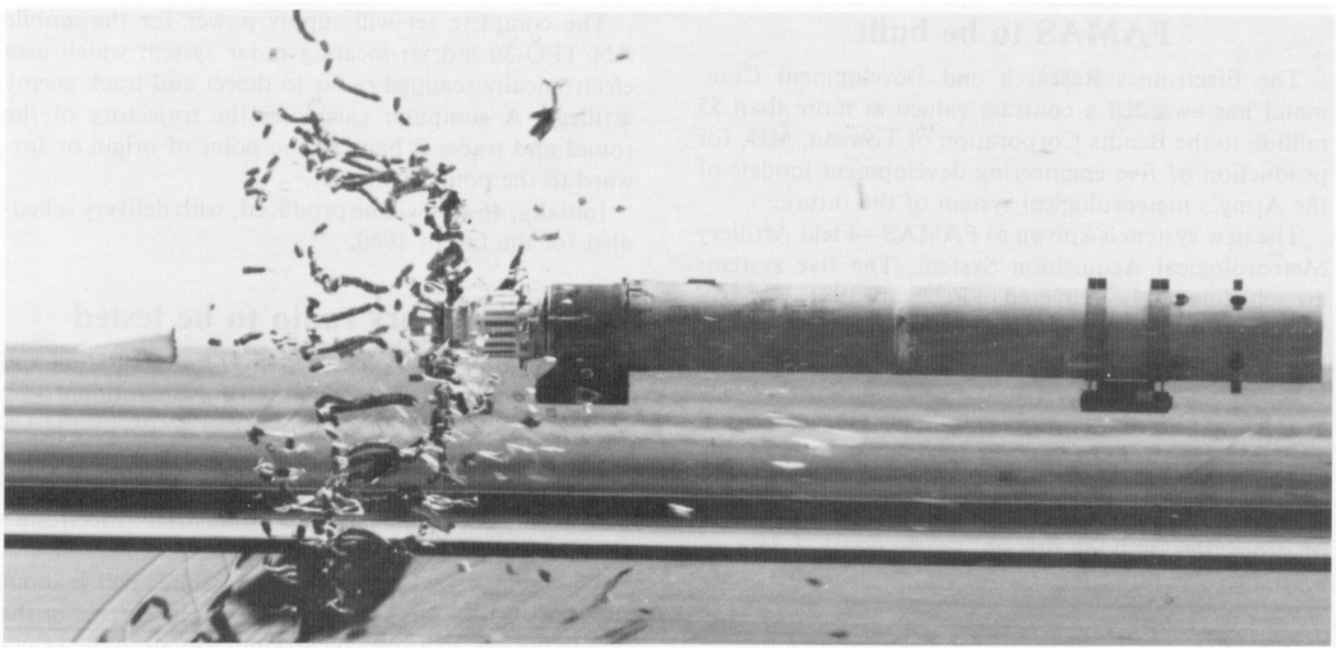


GSRS launcher firings

The Vought Corporation and Boeing Aerospace Company have now completed successful firings of their General Support Rocket Systems (GSRS) from vehicle mounted launchers. The two companies are in competition to build GSRS for the Army and several interested allied nations.

Both Vought and Boeing have conducted other successful rocket launchings from various static platforms; however, these recent firings were the first to prove feasibility of the entire system. The GSRS is scheduled for deployment in the early 1980s. An accelerated development plan began in September 1977 with selection of the two competitive developers. (Vought photo)





Distribution and pattern of munitions dispersal for Boeing's proposed General Support Rocket System is checked out during warhead test. The rocket was mounted on a high-speed sled to simulate velocity. The munitions dispersal subsystem was designed by Honeywell, Incorporated, a member of the Boeing-led team preparing for competitive flights of GSRS. (Boeing photo)

GLLD into production

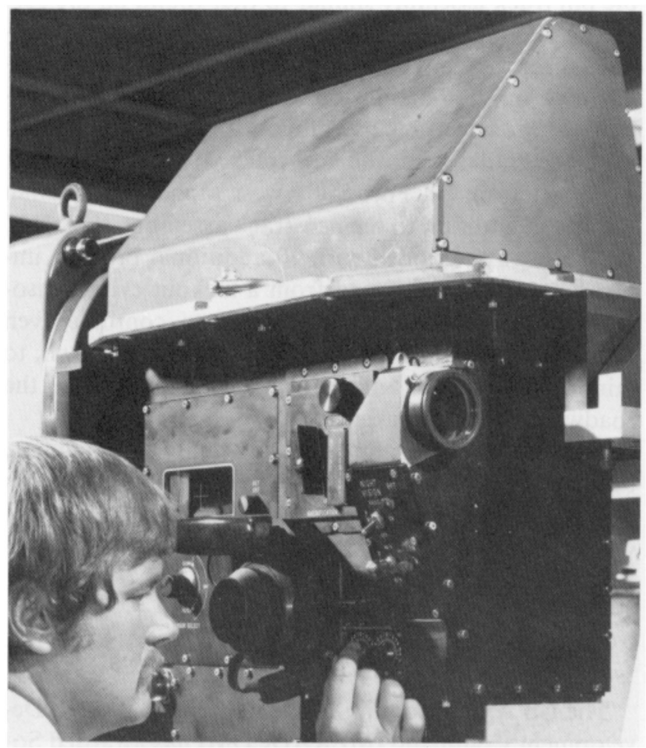
The Missile Research and Development Command has awarded approximately $25 million to Hughes Aircraft Company for engineering services and production of the Ground Laser Locator Designator (GLLD), the Army's most precise laser designator and range finder. Under the contract, Hughes will establish production facilities and produce a first year quantity of GLLDs.

Weighing approximately 52 pounds, the GLLD has already met all Army requirements and has been accepted as standard Army issue.

There is one laser system already in production, and another one is under development. The Laser Target Designator (LTD), a hand-held unit that weighs 16 pounds, went into production about a year ago. The Modular Universal Laser Equipment (MULE) for the Marines is currently in engineering development.

The GLLD has been tested extensively and has demonstrated compatibility with Hellfire, Copperhead, Maverick, laser-guided bombs, and airborne tracking devices. The GLLD will be compatible with all US and NATO laser-guided systems.

In addition to guiding missiles, bombs, and artillery shells fitted with a laser seeker, GLLD also acquires and identifies targets, determines range night or day, and gives azimuth and elevation for conventional artillery which saves time and ammunition required to adjust on targets.



A day-night sight, developed by Hughes Aircraft Company, enables gunners of the Army's new Fighting Vehicle System (FVS) to see through darkness, smoke, or haze. During day and night firings of TOW antitank missiles from the FVS, gunners scored hits against stationary and moving targets in excess of 2,000 meters. (Hughes photo)

FAMAS to be built

The Electronics Research and Development Command has awarded a contract valued at more than $5 million to the Bendix Corporation of Towson, MD, for production of five engineering development models of the Army's meteorological system of the future.

The new system is known as FAMAS—Field Artillery Meteorological Acquisition System. The five systems are scheduled to be delivered in February 1981. FAMAS will replace the Rawinsonde System, AN/GMD-1, which has been our met system since 1949. The GMD-1 is cumbersome, expensive to maintain, and uses World War II technology requiring manual data reduction. The FAMAS will provide direct data input to TACFIRE. With longer range weapons coming into the Army, weather will have even more effect on the flight of projectiles, making precise, timely weather data essential to accurate fires.

New track tested for M110

The Field Artillery Board recently completed an operational feasibility test of the T136 track for the M110 8-inch self-propelled howitzer. The T136 track is a double pin track assembly similar to that found on the current series M109 155-mm howitzers. This test, conducted for the Tank Automotive Command, was to collect data on the reliability, availability, and maintainability of the new track assembly. More than 4,000 miles were accumulated on the new track. It was driven over varying terrain on Fort Sill's west range and Quanah Range. In addition to the new track assembly, the M110 howitzer was equipped with 20 additional product improvements. These ranged from a lockout cylinder isolation system, which enables firing to continue even though an individual lockout cylinder's seal is blown, to minor design and manufacturing changes in the roadwheels and sprockets.

The test was originally designed as only a driving test, but it was expanded to include the firing of 1,000 high explosive projectiles at charge 8. These charge 8 firings were conducted to examine the effects of shock on the changed items.

Generator for Firefinder

The US Army Mobility Equipment Research and Development Command (MERADCOM) has awarded Solar Turbines International and Delco Electronic Division of General Motors Corporation multimillion dollar contracts for the initial production of a 10-kilowatt, 400-hertz gas turbine engine driven generator set for the Army's Firefinder system.

The complete set will supply power for the mobile AN/TPQ-36 mortar-locating radar system which uses electronically scanned radar to detect and track enemy artillery. A computer calculates the trajectory of the round and traces it back to the point of origin or forward to the point of impact.

Initially, 46 sets will be produced, with delivery scheduled for the fall of 1980.

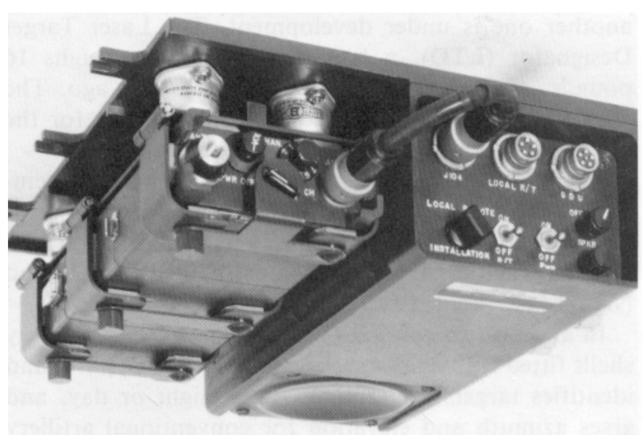
Intrabattery radio to be tested

The Small Unit Transceiver (SUT) AN/PRC-68 and vehicular mount will be tested during Operational Test II (4 September through 2 November 1979) by the US Army Field Artillery Board. The multichannel VHF-FM receiver-transmitter was developed for the Army by Magnavox Government and Industrial Electronics Company of Fort Wayne, IN.

The radio weighs less than three pounds and is about the size of a pocket calculator. It can be carried in the blouse pocket, in a special carrying case, or in the vehicular mount in the M109A2, M110A2, or M477A1.

When introduced to the Field Artillery in the early 1980s, the AN/PRC-68 can be used during the initial occupation of a position and laying of the battery during both day and night operations, thus allowing supervisory personnel to control events in the battery area when frequent displacements preclude the laying of wire. The SUT system can also be used to provide communications during movement when the immediate warning of air or ground attack is critical and to disseminate necessary instructions for emergency fire missions.

The SUT and vehicular mount system should decrease the response times to fire missions, increase safety in the battery area, and reduce the time and confusion associated with rapid occupations of firing positions.



Small Unit Transceiver AN/PRC-68 and vehicular mount system.

Lance Tactical Concepts: Positioning and Movement

by MAJ Robert H. Kimball

During Europe's "WINTER REFORGER 1979," many artillerymen and particularly Lance artillerymen learned there is a lack of knowledge and flexibility in positioning and moving Lance units. Some of these artillerymen believed that movement orders for Lance units during WINTER REFORGER 1979 were tactically unsound. They argued that these orders indicated higher headquarters did not understand Lance tactics. For example, one particular Lance Battalion was directed to move one battery into an unsecured area close to the forward edge of the battle area (FEBA). This movement order resulted in the capture of one of the Lance battalion's firing platoons. On another occasion, this same Lance battalion was directed to displace close to the FEBA, in its entirety, to support a division-level attack. These tactics, however, were not necessarily unsound and do not always indicate poor employment of the Lance system.

Too many Lance artillerymen incorrectly believe that Lance is a rear-area weapon and should never be within range of the enemy's cannon artillery. Many considered orders which required displacing long distances in column formation with no warning order as an indication that their headquarters did not know how to employ Lance. These are misconceptions that can be clarified by reviewing FM 6-42, Field Artillery Battalion, Lance—a good guide to Lance tactics.

Mobility

"***Lance has the mobility to fight anywhere on the battlefield.***"

FM 6-42 states that, in the offense, firing positions must be selected well forward in order to support the main attack. It also recommends that in the defense, as an employment consideration in support of the covering force, we select firing points well forward near the FEBA. Obviously, the question arises, how close to the FEBA is "well forward?" FM 6-42 suggests that Lance normally should be employed out of cannon artillery range, but not necessarily out of the 130-mm or 180-mm field gun range, and that we consider the danger to a Lance unit's area of operations to be two-thirds the range of the 152-mm howitzer/gun. Two-thirds the range of the Soviet 152-mm gun (18,500) is approximately 12,340 meters. Therefore, according to FM 6-42, Lance could normally be employed 13 to 15 kilometers from the FEBA.

"***A Lance unit is best employed by maximizing its capabilities and minimizing its limitations.***"

Currently, some Lance artillerymen believe that Lance units should be positioned at least 25 kilometers from the FEBA. This form of employment is not necessary and totally fails to maximize the capability of the Lance system. This was demonstrated in WINTER REFORGER 1979 during the attack by "ORANGE" forces. In that exercise, the "BLUE" Lance Battalion had received extremely accurate target data but was unable to neutralize the targets. (The "BLUE" forces had decided to position their batteries far to the rear of the FEBA and consequently were not able to range the lucrative enemy targets.) On the other side of the FEBA, the "ORANGE" Lance Battalion did position relatively close to the FEBA and was successful in neutralizing many fixed soft targets ideally suited for the Lance system.

To attack the enemy in depth, Lance must be employed near or on the FEBA. Oftentimes survivability is argued as the primary reason to employ the Lance battalion in or near a division rear area. However, Lance is unique in that the survivability of the system is enhanced by its low detection profile and its ability to hide. The firing platoon's three vehicles and 11 crewmen offer a small profile to enemy observation, especially in a hide area. Its ability to hide is further enhanced when Lance firing platoons operate in hide areas several miles from firing batteries. They can also remain undetected in firing positions using the "shoot through the hole method" until shot time. When shot time occurs, they automatically evacuate the area for a new hide position.

"***To employ Lance effectively on the battlefield, the system must use the same rules of combat as the maneuver force . . . attack deep into the enemy rear . . . fight as a combined arms team.***"

Certainly, as FM 6-42 suggests, there may be times when the tactical situation will require that a Lance battalion be augmented by combat units. However, many firing platoon leaders do not desire security or air defense elements because their presence reduces the platoon's ability to hide and remain undetected.

Tactical movement

A Lance battalion has several unique problems in conducting movements. It may have six launchers, six assembly and transport sections, and five battery headquarters spread over a division front of 40 kilometers or a corps front of 100 kilometers. All of these 17 subelements may be 1 to 10 miles apart, creating immense command and control problems for battery and battalion commanders.

Command and control problems are often compounded by the effects of time and weather. For example, during the attack phase of WINTER REFORGER 1979, a Lance battalion commander was ordered to move his battalion 10 kilometers forward at 0200 hours. The weather conditions were snowy, and the road conditions were extremely icy, which made the task of completing a battalion move at 0200 hours within three hours even more difficult. In viewing these seemingly insurmountable problems, the battalion commander's immediate concern was not the time or weather, but rather the loss of Lance fires to the supported unit. He had to assume that the Lance battalion artillery higher headquarters had considered the loss of continuous Lance fires when it directed the move. However, the loss of the ability to provide continuous fires is not as critical to a Lance unit as it is to a cannon artillery unit. FM 6-42 states: "The old adage that artillery must provide continuous fire support even when under fire does not always hold true in the case of a nuclear delivery unit such as Lance."

This Lance battalion's artillery headquarters had neglected to position its Lance assets in order for it to keep up with advancing elements, as recommended by FM 6-42. As a result, detailed planning, normally required when moving 17 subelements of an artillery battalion to a new area in an efficient and orderly manner, was not possible. In order to complete this hasty move in three hours, it was decided to deviate from the normal procedure of movement by echelon. All batteries were ordered to move their batteries in closed-column formation.

Unfortunately, Lance artillerymen in this and other battalions believe and practice only echelon movements. In the example cited, Lance artillerymen considered the order to conduct a night displacement of the entire battalion by battery column as unsound Lance tactics. FM 6-42 states that a Lance battalion can displace in its entirety when there is no possibility of enemy attack. It also states that echelon movements are not suited for night moves. It lists the disadvantages of echelon movements as lack of command and control, lack of security, and increased possibility of movement elements becoming lost or separated. Experience has shown that movement by echelon in a fast-moving situation is too time consuming and should not be used except in rare daylight moves. Lance battalions should only move at night or during periods of reduced visibility in battery closed-column formation.

Where and how does Lance fight?

All Lance artillerymen must understand that Lance has the ability to fight anywhere on the battlefield and that it is best employed by maximizing it capabilities. They should also review the important recommendations and guidelines on Lance employment and movement techniques in FM 6-42.

Certainly, FM 6-42 does not contain all the answers on Lance employment. It does not, for example, provide a checklist on actions to be taken when Lance is employed near the FEBA, When Lance units are positioned near the FEBA, special security precautions must be taken. Coordination between Lance units and commanders of lead maneuver brigades in the area of operations must also be accomplished.

Lance is still a new weapon system on today's potential battlefield. Lance artillerymen must be flexible and willing to try several tactical concepts to determine the true meaning of maximizing the Lance missile's capabilities. The adoption and development by Lance battalions of some of the tactical concepts in FM 6-42 emphasized in this paper will truly enable Lance to fight as a member of the combined arms team.

MAJ Robert H. Kimball is the S3, 2d Battalion, 377th Field Artillery (Lance).

Major Kimball's article inspired the following comments from the Weapons Department, USAFAS.—Ed.

The School speaks . . .

MAJ Robert H. Kimball's article, "Lance Tactical Concepts: Position and Movement" makes several valid points on Lance employment, but it tends to oversimplify several basic problems. The real point—that Lance tactics must be as flexible as the missile system—could be easily missed by the casual reader.

AR 310-25 defines tactics as, "The ordered arrangement and maneuver of units in relation to each other and/or the enemy in order to utilize their full potentialities." FM 6-42, as Major Kimball pointed out, states that, "A Lance unit is best employed by maximizing its capabilities and minimizing its limitations."

In order to fully utilize Lance, it is important to completely understand some of these capabilities and limitations and those means to optimize systems flexibility. The Lance battalion is capable of operating over extended frontages with the firing platoons separated from their parent batteries by as much distance as the range of radios (AN/VRC-46) will allow. When the KY-38 is used, the separation distance in the European terrain is approximately the maximum classified limits as reflected in FM 6-42-1. Effective resupply to these distant positions is made possible through judicious use of the battalion's seven loader-transporters that are generally deployed as part of launcher and loader-transporter teams. The loader-transporter has the capability to deploy to the firing point with two mated rounds and hide with or near the launcher without significantly increasing the signature of the firing platoon. Due to the small size of the party and the equipment, this "business end" of the Lance system is capable of hiding effectively, even in close proximity to the FEBA.

The limitations of Lance are primarily related to the rest of the unit. Because of Lance's mission, a considerable amount of the firing and service battery's nonfiring assets are involved in command and control and logistical operations including transportation, security, and storage of the battalion basic load. Additionally, when firing platoons are deployed to remote firing points and the survey sections are establishing new points, very few personnel are available to protect a battery area (including the field storage location) from ground attack. The problem is further complicated by the fact that, except for five M577 command post carriers, one recovery vehicle, the launchers and loader-transporters, the rest of the Lance battalion is on wheels and is significantly less mobile than the firing elements. To this end, a unit cannot rapidly displace when threatened by attack.

Some key capabilities and limitations that should be emphasized are:

- The Lance firing elements to include the self-propelled launcher and its companion vehicle, the loader-transporter, can go rapidly anywhere on the battlefield and survive by effectively hiding and delivering the ordnance when and where required.
- The parent units cannot hide as effectively in forward areas and cannot effectively defend themselves against a ground attack. They are especially vulnerable to detection and destruction when deployed within enemy cannon range.
- Command and control elements are less flexible than the firing elements but do not have to be near the FEBA to control launchers employed well forward; command and control elements should not be exposed to unnecessary detection and attack.

With regard to providing continuous fire support, it must be remembered at all times that Lance is primarily a corps weapons system. For example, if the mission is general support reinforcing (GS of corps, R to a div arty), the Lance battalion commander can not assume that the corps commander is willing to be without his long range artillery for any given period. Fire support responsibilities for Lance battalions, as for all field artillery battalions, are designated by the tactical mission assigned. It should also be recognized that the mission of reinforcing is rarely given to a Lance battalion.

As Major Kimball points out, FM 6-42 does state that "The old adage that artillery must provide continuous fire support even when under fire, does not always hold true in the case of a nuclear delivery unit such as Lance." That sentence is extracted from a paragraph introducing the defense of the battery position. The paragraph goes on to explain that, because of the battery's inherent lack of security, it may be necessary to withdraw to a new position if attacked to insure that a portion of the force commander's nuclear firepower is not lost to him. Taken in context with the whole of FM 6-42, the statement cited above lends support to the argument that the Lance battalion commander's major concern should always be providing continuously available Lance fires to the supported unit. In fact, FM 6-42 specifically states that "Continuous fire support must also be available during displacements."

Development of sound SOPs and proper use of the liaison officer can also assist the Lance battalion in effectively maximizing its capabilities and minimizing its limitations on the battlefield. The liaison officer has the implied mission of educating the supported unit on the most effective means of maximizing the potential of the Lance battalion and of keeping the Lance battalion informed of the plans of the supported unit. He must perform this mission aggressively if he is to be effective. The liaison officer must be alert to any change in the tactical situation that may cause his unit to displace and must take the initiative to immediately notify the Lance battalion. The entire battalion RSOP (reconnaissance, selection, and occupation of position) effort must be keyed to his vital and timely information. For instance, if the force is preparing for an attack, the liaison officer should notify the battalion immediately. Thus, appropriate position areas and firing points can be reconnoitered well in advance and in the direction of the attack. As pertinent information becomes available it must be passed. In some instances, there may be some wasted reconnaissance effort but, most importantly, the battalion will never be caught short during rapid or unannounced displacements. The Lance battalion must develop an effective SOP for maintaining continuous fire support during these moves and must train to implement their SOP.

Another key to providing continuous fire support is maintaining continuous fire direction capability and communication with the firing elements, whenever they are deployed. Movement by echelon and by battery both permit these tasks to be accomplished. Fire direction responsibilities for the battalion can be placed on one of the firing battery FDCs while the battalion FDC is moving to its new location and vice versa during battery moves. Since battalion displacements preclude this option and require all the battalion's launchers to be called in from their remote firing points, they are, as FM 6-42 states, ". . . the least desirable method and seldom will be used by Lance units."

Some conditions under which battalion displacements might be necessary and appropriate would be as follows:

- Administrative moves to major training areas.
- A change of mission requiring long road marches to a new area or to staging areas.
- During the initial stages of increased alert, the unit might deploy to displacement positions using this technique.
- Movement during any situation where chance of attack is negligible and speed and control are critical.

The commander who decides to place his Lance battery and battalion position areas within enemy cannon range or to move battalions as a whole must be aware that he is taking a grave risk. He also must meet all the responsibilities inherent in his assigned mission, provide continuous fire support for the force commander, and accomplish these tasks without jeopardizing the critical elements of his unit. The commander cannot be expected to do this without suffering a loss but, by judicious application of sound judgment and available doctrine, he can use the Lance missile system to its full potential and reduce unacceptable risks. Lance battalions, properly positioned, can maximize system capabilities, minimize their limitations, fight anywhere on the battlefield, and attack deep into the enemy rear as part of the combined arms team without ever losing their ability to provide responsive fire support whenever and wherever it is needed.

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

Year Group 72 specialty designation

Recently, 268 Field Artillerymen in year group 72 were designated an additional specialty as part of the eighth year designation process. The other 17 Redlegs in that year group had been previously designated because of participation in a fully funded advanced civil school program or possession of unique skills and experiences.

Of the 78 percent of officers who submitted preference statements, 71 percent received their first or second choice and 90 percent received their third or fourth alternate. Ten percent of the officers received a specialty which they did not request, primarily because of preferences that were not feasible or stated desires which could not be accommodated because of Army requirements. Results of the designation process were recently released and local MILPOs are responsible for notifying each officer.

Officers in year group 73 should expect to receive specialty preference statements in November or December 1979. If the statements are not received or there are questions about the suitability of specialties, write MAJ Jack Keith or MAJ Jut Hughes at 200 Stovall Street, ATTN: DAPC-OPE-P, Alexandria, VA 22332 or call AUTOVON 221-0700/0701.

Reserve Components OER system changes

Beginning in September, National Guard officers will be rated under the Active Army's new officer evaluation report (OER). Most Reserve officers will start receiving their ratings under the new system in February 1980.

The new OER will be phased in the National Guard over a five-month period. Transition periods, based on officer grades, are as follows:

- Lieutenants—15 September through 31 October.
- Captains—15 October through 30 November.
- Majors—15 November through 31 December.
- Lieutenant colonels and colonels—15 December through 31 January.
- General officers and warrant officers—15 January through 28 February.

MILPERCEN says a pamphlet describing the new OER system will be distributed to all Reserve Component officers this summer.

Graduate transcripts

Officers with graduate degrees should make certain that copies of their college transcripts are included in their official personnel files.

These transcripts are periodically used for personnel actions, as well as assuring proper information is entered on individual Officer Record Briefs (ORB). Future changes to regulations will require filing of a transcript as a prerequisite for entry of a graduate-level degree code or a change in the civilian education level code on the ORB.

Officers with graduate degrees should review their microfiche personnel file. If the records do not contain a transcript, a copy should be forwarded to: Commander, MILPERCEN, ATTN: DAPC-OPP-E, 200 Stovall St., Alexandria, VA 22332.

Assignment officer update

The Specialty 13 assignment officers at OPMD, MILPERCEN, are as follows:

Colonel's Division	**AV 221-7862/7863**
SC 13 (A-K)	LTC Roderick L. Carmichael
SC 13 (L-Z), SC 54	LTC Joseph W. Bagnerise
Lieutenant Colonel's Division	**AV 221-9789/9529**
SC 13 Overseas, SC 54	LTC David Roche
SC 13 CONUS	LTC Michael W. Gilmartin
Major's Division	**AV 221-0686/0687**
SC 13, 54 CONUS	MAJ John C. Truesdell
SC 13, 54 Overseas	CPT(P) Leo Baxter
Company Grade Combat Arms Division	**AV 221-7817/0187**
Captains - CONUS	MAJ Bill Ott
Captains - Overseas	CPT Joe Eszes
Lieutenants - CONUS & Overseas	CPT Dennis Cline
Advanced Course	CPT(P) Jim Shane
Branch Chief	LTC Leslie E. Beavers

To call commercial, dial Area Code 202-326 and then last four numbers of extension.

Help coming for missileers

The bane of Army service for Pershing and Lance artillerymen has been the problem of space imbalance—most of the duty assignments for the missileers are overseas. Often they spend only a short period in the States between overseas tours and, in a 20-year career, spend as much as 12 years in foreign countries. Add to this, more frequent moves for families, and these soldiers have reason to complain.

MILPERCEN is working on relieving this problem and has a new, very complex system called SIMOS—Space Imbalanced MOS. The 30 March issue of *FOCUS* (available in each orderly room) and DA Circular 611-62 contain the specifics, but the program's general elements are outlined below.

The Field Artillery MOSs involved are 15D, 15E, 15F, 15J, 21G, and 21L. All except the 15F (Honest John Rocket Crewman) are fully activated in SIMOS. The Honest John MOS will join other imbalanced MOSs for a total of 44 MOSs by 1981. Initial review shows approximately 27,000 soldiers in SIMOSs of which 9,000 already have been integrated into the program. Soldiers who enlist for four years and those on second enlistments are invited into the totally voluntary program. MILPERCEN indicates those in the program will receive intensive career management.

The initial measure taken will be to improve the percentage of SIMOS soldiers being assigned in their primary MOS (PMOS) when overseas. Because of the small sustaining base for PMOS use of these soldiers, efforts are underway to identify CONUS positions where these soldiers can be used in their secondary MOS *at a location* where they can at least be *exposed to* units having their PMOS (for refresher training, SQTs, etc.)

If it is impossible to use the SIMOS soldiers returning from overseas tours in their PMOS or to assign them near units where PMOS currency is relatively easy to maintain, the soldiers will probably pass through Fort Sill for resident refresher training in their PMOS before returning overseas.

Foreign service tour extensions are being encouraged for SIMOS soldiers (monetary incentives are being proposed). If overseas extensions are used widely, CONUS tour lengths will increase and the number of family dislocations will decrease.

Greater emphasis will be placed on the SIMOS soldier's secondary MOS so he or she can be fully utilized during CONUS non-PMOS assignments. The planned method for doing this is through heavy use of the Army Correspondence Course Program (ACCP). MILPERCEN will take an active role in the study program to the point of actually enrolling the soldier in the appropriate ACCP.

The Reserve Components have not been forgotten. Army National Guard and Army Reserve soldiers with SIMOSs will be permitted to come on active duty for periods not to exceed four years, but only in overseas assignments.

One other element of the overall program is an option already in being—the Bonus Extension and Retraining Program under which a soldier in a balanced or overstrength MOS may extend, receive training, be awarded one of the SIMOSs, and receive a reenlistment bonus.

The mechanics of the SIMOS program are detailed and complex and require the full cooperation of many people, but the program deserves support to end the "revolving door" treatment given our missile people in the past.

SQT impact modified

Soldiers are no longer considered for reclassification based solely on their latest Skill Qualification Test (SQT) results, according to MILPERCEN officials. Soldiers who were promoted or recommended for promotion or reenlistment before receiving their latest SQT scores will not be considered for reclassification, regardless of the test results.

The second edition of SQT results for some MOSs have been sent out and, by regulation, some soldiers could be considered for reclassification based on these scores. Soldiers with a score of less than 60 percent in block IIB1 on their Enlisted Evaluation Data Report (Form 10A) and a percentile ranking score of less than 10 in block IIB2 for the second time could be reclassified.

The reclassification guidance contained in paragraph 2-32*a*(1)(*b*), AR 600-200, is no longer mandatory. This is now subject to the commander's discretion. A forthcoming change to the regulation will include this clarification.

RA warrants eligible for USAR commissions

Regular Army warrant officers may now apply for direct appointment as Army Reserve commissioned officers without having to resign their RA warrants. The Reserve commissions are *inactive* which would be activated only if the Reserves are mobilized.

Previously, warrants could not hold dual status as a Reserve commissioned officer.

Instructions for preparing and processing applications are listed in the change to AR 135-100 which should be in the field now.

New management for aviators

New management for aviators is now underway at MILPERCEN.

Army Aviation today is recognized as a full member of the combat arms team, having a combat maneuver role as its primary mission. Essential to the accomplishment of this primary mission are the combat support and service support roles: maintenance, intelligence, and medical. Personnel management policies and procedures are being revised to support this new direction for Army aviators.

Specialty Code (SC) 15 is the primary aviation specialty, accounting for 80 percent of the total requirements for commissioned aviators.

Within SC 15, three special skill areas associated with combat arms are being proposed as a change to the current aviation special skill identifiers (SSI) listed in AR 611-101, as follows:

1) 15A (general aviation) identifies positions for instructors at aviation training centers, advisors to Army Readiness Regions, and commanders and staff officers for Army airfields and various TDA flight detachments.

2) 15B (combat aviation) identifies positions for commanders and staff officers in assault helicopter, air cavalry, attack helicopter, and combat aviation units.

3) 15C identifies positions in air traffic control, assault support helicopter, and general support helicopter units.

These special skill areas are associated only with the Field Artillery, Infantry, Armor, and Air Defense Artillery Branches and their respective officer basic and advanced courses.

The new management branch will be responsible for training and assignment of aviators to fill 15A, B, and C positions worldwide.

Questions concerning the details of this reorganization and the new professional development of SC 15 aviators may be addressed to the Aviation Management Branch, MILPERCEN, by calling AUTOVON 221-7820/9794 or commercial (202) 325-7820/9794.

Promotion policy changes for NG and Reserves

Some Army Reservists can now be promoted regardless of whether a unit vacancy exists, according to DA personnel officials.

In the past, Reservists could be promoted only when there was a vacant position in their units, which severely limited promotion opportunities. Now Reserve soldiers can be promoted to E3 and E4 without regard to unit vacancies. E5s with five year service and E6s with 12 years service will also be eligible for promotion under the new policy. When a position becomes vacant in the promoted soldier's grade and skill, he will be assigned to fill that position.

A similar program is planned for the Army National Guard as soon as funds to support the program can be identified.

Soldiers promoted under the new policy, which will be in effect for the next two years, must meet eligibility criteria included in AR 140-158 or NGR 600-200.

Paper vs microfiche OMPFs

The old familiar "paper records" for military personnel have been transferred to microfiche and only those for the grades of major, first/second lieutenant and E6 have not been destroyed.

Individuals in these grades may still purchase their paper copies of records by sending a check payable to "Treasurer of the United States" to the appropriate records center before the dates listed below. A statement that the service member will not resell the records must accompany the request.

Grade	Destruction Date	OMPF Cost ($)
MAJ	1 Sep 79	4.50
1LT	1 Sep 79	4.00
2LT	1 Sep 79	3.00
E6	1 Jan 80	3.50

Officers must forward their request to:

Headquarters, MILPERCEN
ATTN: DAPC-PSR-SR
200 Stovall Street
Alexandria, VA 22332

Enlisted members in grade E6 must forward their request to:

Commander, USAEREC
ATTN: PCRE-FP-M
Fort Benjamin Harrison, IN 46249

Officers and enlisted members E6 through E9 can obtain free of charge, copies of their microfiche personnel records.

Officer correspondence should be addressed as above; however, noncommissioned officers should address their requests to:

Commander, USAEREC
ATTN: PCRE-RF-I
Fort Benjamin Harrison, IN 46249

Requests must be made individually, in writing, and must include the service members social security number.

The Total Force

by CPT Barry D. Willard

Many Active Army personnel are not familiar with either the force structure that exists in CONUS for the support of the US Army Reserve (USAR) and Army National Guard (ARNG) or what these units do during the course of a training year. The system uses the CONUS-based Army as the foundation with Army Readiness Regions (ARR) assigned to cover geographic areas within the Army area. The ARR is further subdivided into Readiness Groups to facilitate support of both USAR and ARNG units within the Region areas. The current force structure contains nine Readiness Regions that cover the 48 continental states and Puerto Rico (figure 1).

The Active Army advisors at the Readiness Groups are assigned to Branch Assistance Teams (BAT) or to Functional Teams. In ARR VI the "dedicated unit advisors" are generally assigned only at brigade level and higher except in certain instances where a unit is in an isolated part of the state or is designated as a "high priority" unit. The battalion advisor slots of several years ago are being phased out by attrition and new personnel are being maintained on the BAT at the Readiness Groups. The units cited as exceptions will maintain their unit advisors under current plans.

The USAR and ARNG units themselves are different in their internal command and control networks. The USAR units are assigned to Army Reserve Commands or General Officer Commands which serve as a vital link in their chain of command. The ARNG units belong to the state in which they are stationed and are in many instances structured along traditional lines in brigades and divisions. The missions of these units vary as much as the different branches they represent. Within the scope of the Reserve Components (RC) every branch is represented and expected to maintain its individual as well as its unit proficiency. In addition to their FORSCOM training objectives, the ARNG units also train to perform state missions relating mostly to state-wide or local emergencies as designated by that state's governor. USAR combat arms units are assigned to armories in battalion size in cities that can support a unit of battalion strength. This can and does present problems in recruiting especially if more than one USAR unit is located in the same metropolitan area. Generally speaking, ARNG units have smaller recruiting areas population-wise and are traditionally linked with the area in which they are located.

The first visit to a Reserve Component unit by an advisor fresh from an active duty battalion assignment can be an eye-opener. It is important not to develop first impressions of a unit without seeing the unit as a whole. To an officer fresh from the European environment where motor pools and work areas must be maintained in almost "spit and polish" condition, that first visit to a Reserve Component motor pool, where maintenance is carried out by a few civilian technicians on a continuing basis, can be unnerving. But seeing what can be accomplished and the excellent condition of most of the vehicles, it is evidence that "eye wash" in the motor park is not necessary to maintain equipment. Some active units could take lessons on vehicle maintenance from this small group of dedicated technicians who do not, as a rule, have much assistance except on drill weekends. A full-time administrative-supply technician (AST) keeps the armory operating on a day-to-day basis. An ARNG technician holds a position in the unit for which he works; a USAR technician must be a member of a USAR unit but not necessarily the one for which he works as a technician.

Units must complete 48 four-hour drills or approximately 24 days during the year plus a two-week annual training session. In addition, there are some extra pay periods allocated to the unit commanders that permit preparation for training assemblies and trips to Active Army installations for coordinating site training, field training exercises, etc.

The quality of a unit's training during the year is put to test each year at annual training (AT) during a two-week period, normally during the summer, although many RC units conduct winter AT now at Camp Ripley, MN. The USAR unit is evaluated by Active Army evaluators, and ARNG units are evaluated by personnel designated by Headquarters, FORSCOM. The advisors from the Readiness Groups accompany the units to assist in their training prior to evaluation. The association between the Reserve Component unit and the Active Component (AC) unit is beneficial for both units. The assistance provided by the AC unit benefits the RC unit and complements the training conducted at AT. Additionally, the active duty soldier sees that a unit manned by what he has been led to believe are "weekend warriors" can be just as professional as any active duty unit, sometimes more so.

What does an RC unit do during the year at its home armory? Normally after the annual training, which in fact amounts to a unit mobilization, about two or three

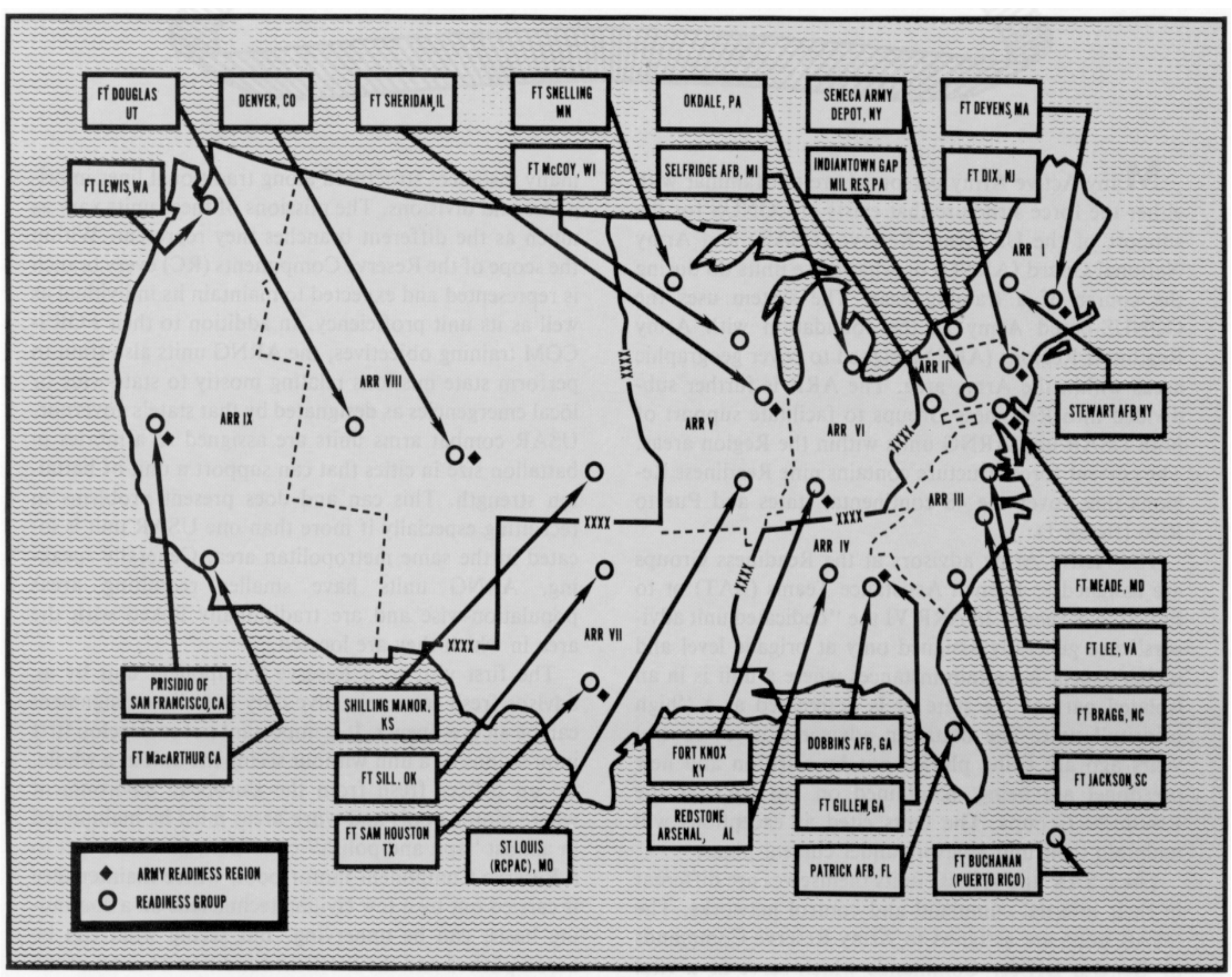


Figure 1. Army readiness regions and groups.

drill periods are required to get the unit's equipment back in condition for the remainder of the year. Also during these periods, training is organized by the battalion for the coming year. Since this yearly training is scheduled in advance, post-AT training will reflect what was determined by the evaluators as weak or strong points in the unit. In some instances, training will continue to increase individual proficiency to higher levels and attempt to correct noted deficiencies in the past year's training. In this respect the advisors of the Readiness Groups can play a vital role if the unit recognizes this source of assistance.

The Readiness Group BATs have a variety of experience and skills available on-call to the RC commander. Unfortunately many RC commanders look on the BATs as inspectors, not assistors, and hesitate to call on them. Regardless of the branch of a particular unit, teams to assist in any area can be obtained through the BAT for that particular unit. For example, if one of our Field Artillery or Air Defense Artillery units needs assistance in a specific area, lets say, files management, the BATFA coordinates with the members of the Functional Administrative Team to visit the requesting unit either during the week or during a drill period (whichever is more convenient for the unit) to give whatever assistance is needed. This goes for all assistance teams in a Readiness Group. This assistance runs the gamut of everything from going through a first sergeant's duty roster (to make sure he is aware of all the current policies) to conducting formal classes and field training in preparing an artillery battery for the delivery of fire. Once the RC commanders realize that the Readiness Group advisors are not "they" from higher headquarters, but are capable and interested in readiness, the overall readiness of both USAR and ARNG will increase.

All in all, with approximately 190,000 men and women in the USAR and 365,000 in the ARNG, it can readily be seen that the "total force" can make the difference in a future conflict.

CPT Barry D. Willard is a Branch Assistance Team advisor, assigned to Headquarters, US Army Readiness Region VI, Fort Knox, KY.

How heros are made?

During World World War II, I was a forward observer with Combat Command B, 3d Armored Division, supporting the 30th Infantry Division. My orders were to stay with the lead elements on the attack of Haute Vents (Hill 91).

During the attack we started up a hill and got within 300 meters of the top when darkness fell. We paused before making the last dash while the 391st Armored Field Artillery Battalion fired a preparation concentration. The concentration fell short, causing the tanks (all except mine) to fall back about 50 yards while I called for a cease fire to give a correction. My tank had stalled from a dead battery and the 105s were bursting all around us. My gunner and loader were busy with a very obstinate "Little Joe"—the battery charger driven by a two-cycle lawn mower type engine. We were out there alone, and I really began to worry when our guns stopped firing. Finally, "Little Joe" decided to cooperate and with its help we got the main engine started so that we could pull back with the rest of the tanks. The final assault had been called off until dawn.

One of the tanker sergeants walked over and remarked that we had done a brave thing to stay out there to cover their withdrawal. I looked at him for a moment and replied drily, "Yeah."

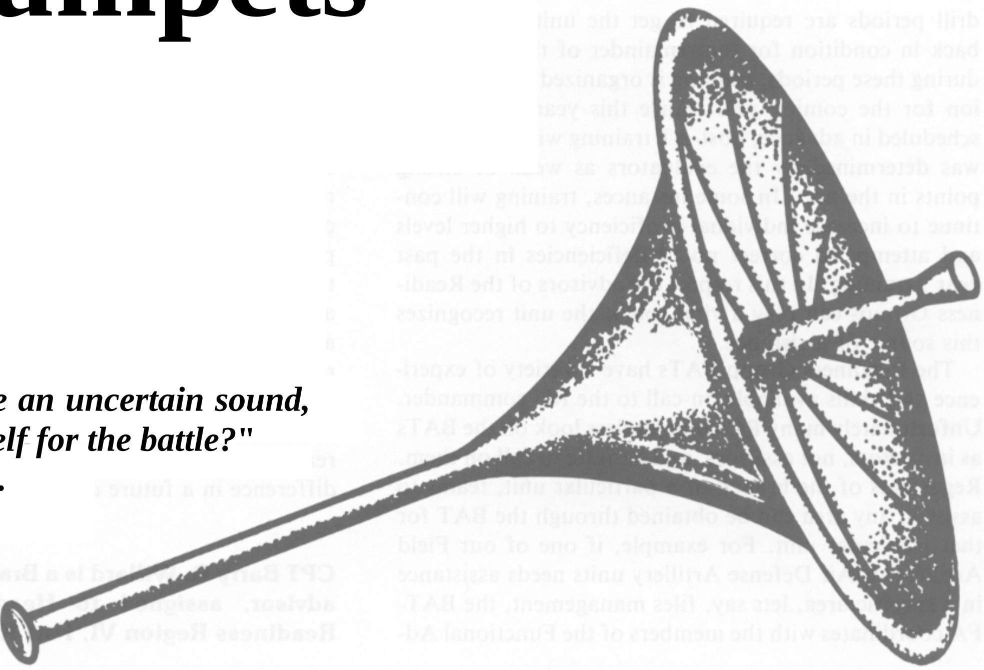
Later, I realized that this is how some heros are made!

Submitted by LT (Ret) Ralph R. Balestrieri.

The trumpets of war

by William F. Ryan Jr.

"For if the trumpet give an uncertain sound, who shall prepare himself for the battle?"
—I Corinthians, XIV, 8.



Today, the trumpets of war are electronic—capable of beckoning men to battle from the distances of outer space. The trumpets are waveguides, elongated into the shape of horns, which electromagnetically radiate their message from earth-orbiting satellites. These satellites—looking at the earth from a nearly circular orbit—along with ground terminals tuned to hear their battle message, have become indispensable tools for surveillance, warning, and communications.

Using the European theater as a model, this article will focus on a potentially important application of satellite communications—command and control of theater nuclear weapons by commanders, using transportable satellite earth terminals. The history, threat, environment, and communication improvements to command and control for nuclear weapons execution will be addressed.

History

The communications leg of command and control has been an aspect of the history of man's conflicts from ancient time.

On 4 October 1957 the Soviet Union launched their Sputnik satellite. Little more than a year later, the US Army conducted its initial experiment with an active communications satellite, Project Score. The satellite was used to broadcast President Eisenhower's Christmas message to the world in 1958.

The Americans and the Soviets were just leaving the starting gate for the space race in the early 1960s when the Department of Defense established the World Wide Military Command and Control System (WWMCCS) to provide the President and the Secretary of Defense the information needed to direct US military forces. The system included the communications networks required for reliable transmission of data, with a minimum of delay, under all conditions of peace and war.

As the WWMCCS evolved, international crises in which US forces were attacked by foreign nations such as the attack by Israel, 8 June 1967, that killed 34 of the USS Liberty crew; the seizure by the North Koreans of the USS Pueblo, 23 January 1968; the war in Vietnam; and more recent incidents, such as the Mayaguez, dramatically highlighted shortcomings in the functionally oriented systems of the WWMCCS. Geared to support the Unified and Specified Commands, the WWMCCS suffered from a less than optimum linkage and did not constitute an effective, global command and control system.

From the 1960s through the mid-1970s, space activities of the Soviet Union and the United States continued parallel. Both Russian and American satellites provided communications support to their respective military and national level intelligence organizations. Communications satellites also processed encrypted speech text and were supported by an extensive ground support network.

The threat

The US deterrence of aggression rests on convincing our adversaries that we can respond swiftly to any hostile act. The Soviets see command, control, and communications as central to any conflict; as a corollary, command, control, and communications would have the goal of neutralizing any US/NATO capability in this area. Fixed command and control that support the release authority and use of theater nuclear weapons present high priority targets in any Soviet attack. Tactical command and control would be targeted for intensive jamming by enemy electronic warfare capabilities. The Soviets have a well-defined doctrine for jamming and interference, oriented toward the disruption and destruction of our command, control, and communications. Soviet General A. A. Siderenko in his book, *The Offensive*, observes that—

> *Combatting enemy tactical means of nuclear attack includes the neutralization of their organs of control. In a combat situation, all commands and orders will be transmitted by radio. Consequently, the disruption of the control of these means also comprises an important element of the combatting of enemy means of nuclear attack.*

Nuclear weapons in Europe

The United States has about 7,000 nuclear warheads deployed in Europe. Our theater nuclear forces consist of nuclear-capable cannon, surface-to-surface missiles, nuclear-armed strike aircraft, nuclear air defense, and manually emplaced mines. Additionally a number of Poseidon and Polaris submarine-launched ballistic missiles are committed to support NATO forces in Europe.

The use of nuclear weapons can no longer be viewed as being in the realm of the unthinkable, nor, despite their numbers, can they be viewed as business as usual. What is certain is that the complexity and seriousness of employing theater nuclear weapons will place a tremendous strain on communications systems—systems that may already be overloaded by an escalating conflict and attack by enemy electronic warfare efforts.

In the event of a conflict that is escalating toward the possible use of nuclear weapons, both the weapons and the command and control which support their execution would have to be moved from their many peacetime storage sites to the vicinity of the using units.

Figure 1 outlines the process for a military commander to obtain authorization to use tactical nuclear weapons. Processing and decision times consume about 70 percent of the request sequence with transmission time using the remainder of the time. This ratio of 7:3

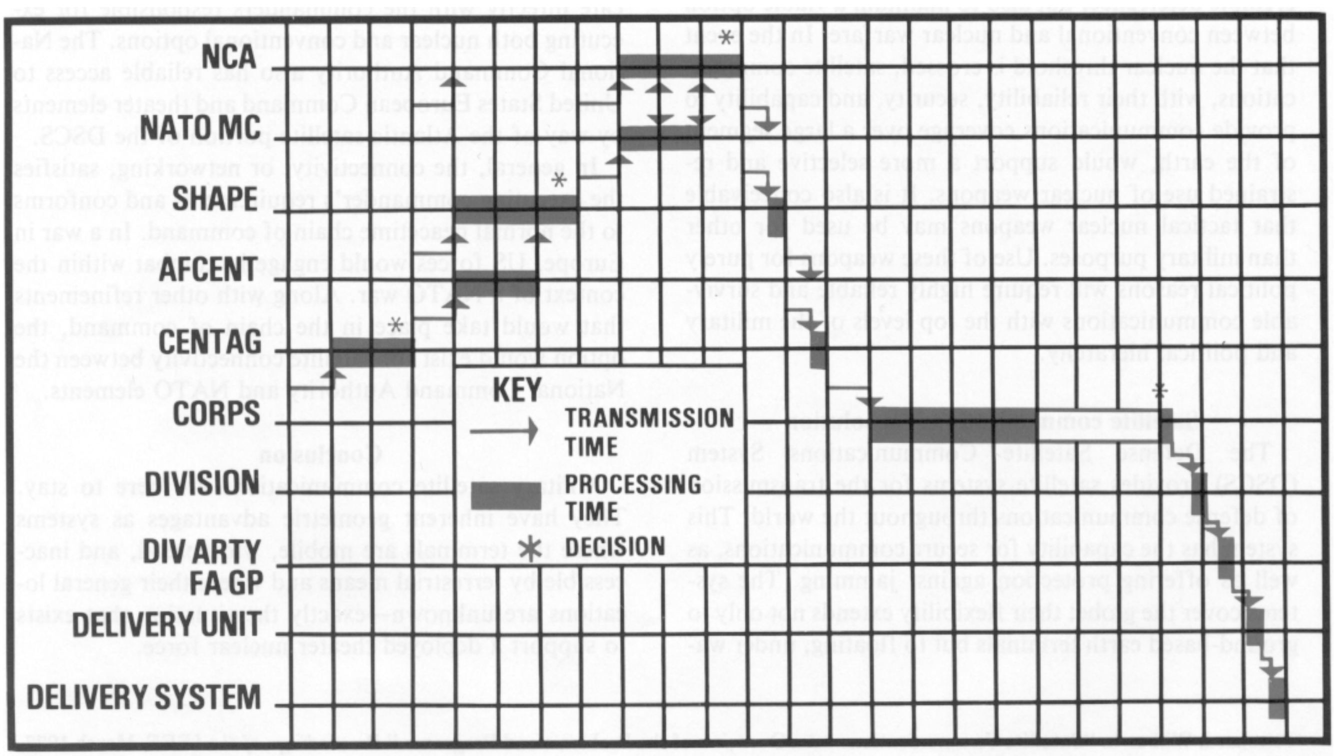


Figure 1. Request sequence.

would probably change dramatically after crossing the steep psychological-political barrier to a decision to use nuclear weapons. After an initial decision to use nuclear weapons, subsequent decision would probably occur more quickly, whereas transmission time is relatively constant. Transmission time could then be the limiting factor to getting data up and down the system to the point where a nuclear weapon could be used.

To preclude a nuclear exchange, deterrence must be credible; therefore, Russia and her Warsaw Pact allies must believe that the United States and NATO have the resolve and the capability to execute our theater nuclear war options. Additionally, the Warsaw Pact nations should perceive our capability to combine tactical nuclear options with the US plan for the coordinated delivery of nuclear strikes by strategic nuclear forces. Execution of nuclear strikes with the weapons under the command of NATO's Allied Commander, Europe could be a precursor to an all-out nuclear exchange. In essence, theater nuclear forces complement general purpose forces and provide a continuum between conventional and strategic forces.

Weapons systems technology makes it feasible for time between warning and attack to be compressed. Similarly, the processing and transmission time for weapons execution must be optimized. It is important that technological advances be applied to the area of command and control of nuclear weapons to allow the United States not only to present an unquestionably credible deterrence, but also to maintain a viable option between conventional and nuclear warfare. In the event that the nuclear threshold is crossed, satellite communications, with their reliability, security, and capability to provide communications coverage over a large segment of the earth, would support a more selective and restrained use of nuclear weapons. It is also conceivable that tactical nuclear weapons may be used for other than military purposes. Use of these weapons for purely political reasons will require highly reliable and survivable communications with the top levels of the military and political hierarchy.

Satellite communications—a solution

The Defense Satellite Communications System (DSCS) provides satellite systems for the transmission of defense communications throughout the world. This system has the capability for secure communications, as well as offering protection against jamming. The systems cover the globe; their flexibility extends not only to ground-based earth terminals but to floating, under water, and airborne platforms. The decisions of the National Command Authority can be readily transmitted through these terminals to executing commanders by a network of communications paths which have characteristics such as physical hardening, mobility, anti-jam features, crypto-security, and protection from some of the effects of nuclear weapons explosions to include damage from voltage and current surges.[1]

These capabilities have their price. Satellite earth terminals—with the requisite reliability, availability, survivability, and the long list of other "abilities" required in military hardware—cost more than a million dollars a copy. Nevertheless, the reduction in uncertainty that satellite communications can provide, along with quantum improvements in networking, appear to be worth the cost. Accordingly, the Department of Defense is in the process of requirements definition and analysis activities for the employment of jam-resistant, secure satellite communications to support executing commanders.

Figure 2 illustrates the various echelons and the communications need-lines between commanders who have the decision-making authority to recommend the use, and execute the release, of tactical nuclear weapons during conflict. The case shown is for the European theater which is representative of the interface that would exist between any theater commander, his forces, and the National Command Authority. The network provides CINCEUR/SACEUR with the capability to communicate directly with the commanders responsible for executing both nuclear and conventional options. The National Command Authority also has reliable access to United States European Command and theater elements by way of the Atlantic satellite portion of the DSCS.

In general, the connectivity, or networking, satisfies the executing commander's requirements and conforms to the normal peacetime chain of command. In a war in Europe, US forces would engage in combat within the context of a NATO war. Along with other refinements that would take place in the chain of command, the option would exist for satellite connectivity between the National Command Authority and NATO elements.

Conclusion

Military satellite communications are here to stay. They have inherent geometric advantages as systems where the terminals are mobile, widespread, and inaccessible by terrestrial means and where their general locations are unknown—exactly the situation that exists to support a deployed theater nuclear force.

[1] Pritchard, Wilbur L. "Satellite Communications—An Overview of the Problems and Programs." *Proceedings of the IEEE*, March 1977, p. 301.

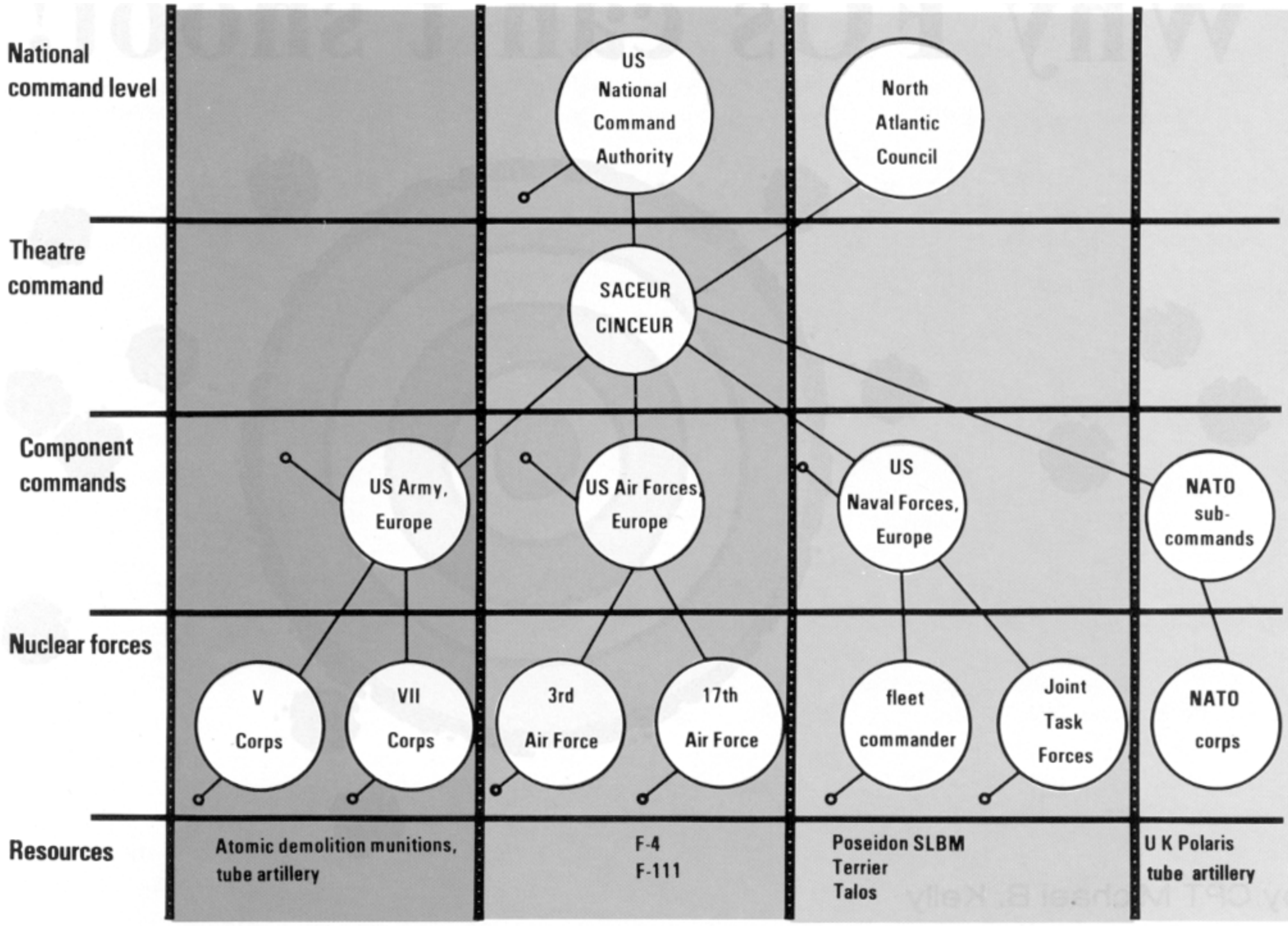


Figure 2. Communications network.

In the European situation, where a degree of nuclear parity exists between NATO and the Warsaw Pact countries, the superior command and control possible with satellite systems achieves a force multiplier effect. We should exploit this effect by intensifying our efforts to deploy such systems—global systems that not only keep our nuclear powder dry, but signal to the Soviets our resolve to deter nuclear conflict.

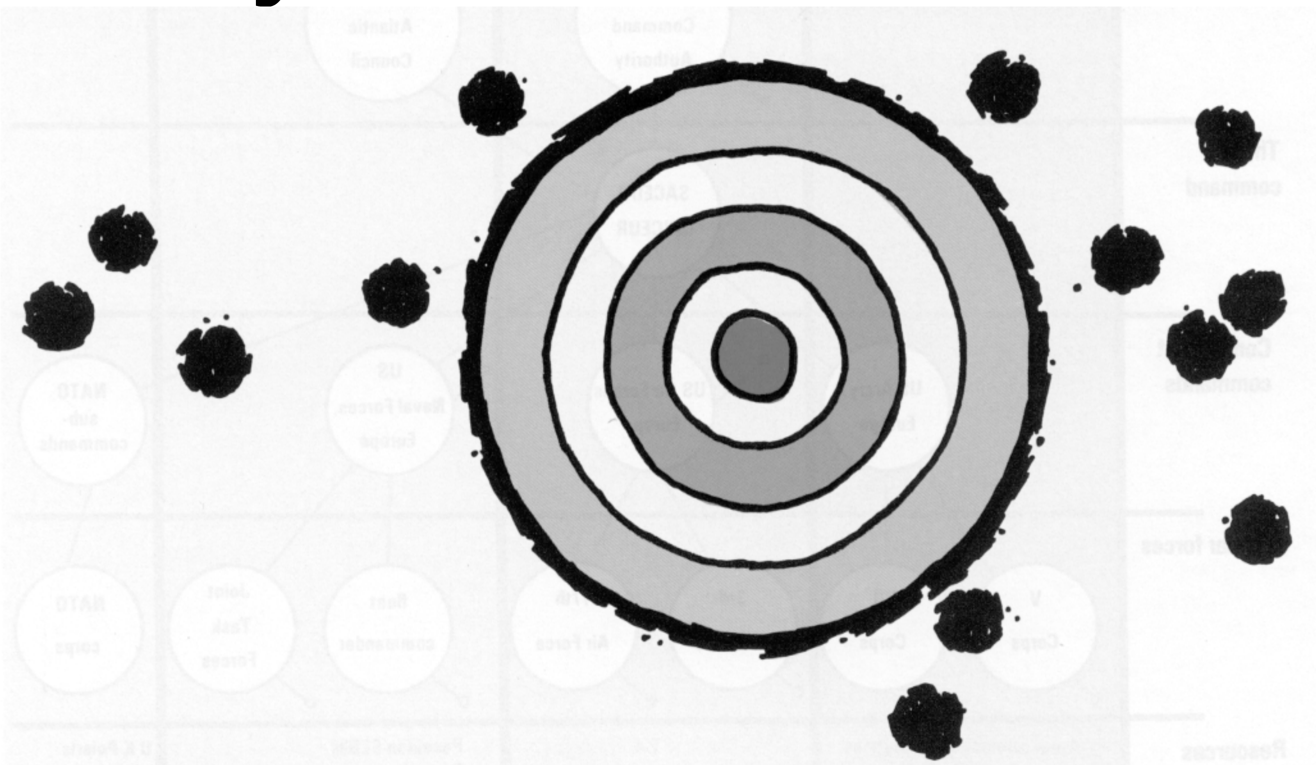
Admiral Alfred Thayer Mahan's observation some 80 years ago is not an understatement in today's nuclear world:

> *Communications dominate war; broadly considered, they are the most important single element in strategy—political or military.*[2]

Mr. William F. Ryan Jr., DAC, is Chief of the Systems Management Division, World Wide Military Command and Control System (WWMCCS) Management Office of the US Army Communications Command located at Fort Huachuca, AZ. He is a graduate of the National Cryptologic School and the Armed Forces Staff College and holds an MA degree from the University of Northern Colorado. He has completed the nonresident curriculum of the Industrial College of the Armed Forces and the Army Command and General Staff College. His current assignment includes the implementation of jam-resistant secure communications programs to upgrade the WWMCCS.

[2]Westcott, Allan, ed. *Mahan on Naval Warfare*. Boston: Little, Brown and Company. 1944, p. 77.

Why FOs can't shoot!



by CPT Michael B. Kelly

Since the advent of the indirect fire technique, accuracy of field artillery fire has largely rested on one man—the forward observer. The other two elements of the gunnery team, the fire direction center and the weapons, have and are receiving equipment, which will allow the quick and accurate solution to the gunnery problem. TACFIRE, the new velocimeter, new survey equipment, and present meteorological equipment satisfy all of the requirements for accurate predicted fire, except target location. We must still rely on the ability of the forward observer (FO) to locate himself, associate the target to the surrounding terrain, and estimate a range to the target. The FO usually performs these tasks without measuring equipment, relying on his skill and judgment. The FO can accurately locate himself and targets with a hand-held laser rangefinder or laser designator, but these may become inoperable or may not be available. Therefore, the FO should be able to use a map, a compass, and binoculars to locate himself within 150 meters of his actual location and to locate targets within 250 meters of their surveyed location.

The Human Engineering Laboratory Battalion Artillery Test (HELBAT), conducted at Fort Hood, assessed the overall accuracy of the field artillery system and found errors in the system. The source of over half the errors was due to the forward observer, whose target location errors ranged from 500 to 700 meters.

In May 1977, the Combat Development Experimentation Command (CDEC) at Fort Ord conducted a test of map products to determine whether the use of different maps and aerial photographs would improve FO performance. An additional experiment was conducted to evaluate the use of a step-by-step procedure for target and self location to reduce location errors. The control group located itself and targets using any procedure it wished, while the test group was told to use a procedure of measuring the azimuth to the target, estimating the range to the target, and analyzing the terrain along the observer-target line. Location errors for the control group averaged over 400 meters, whereas the test group located targets well within ARTEP standards (250 meters). This procedure was adopted, with modifications, by the Gunnery and Counterfire Departments at USAFAS and is used in teaching target and self location in FAOBC. The method, known as the "thought process," is as follows:

Self Location

1. Analyze and locate man-made features on the map.
2. Analyze and locate natural terrain features on the map.
3. Orient the map using terrain association.
4. Determine location in relation to the located man-made and natural terrain features.
5. Determine grid coordinates of location.
6. Refine location as time permits using resection or modified resection.

Target Analysis

1. Associate the target position with the terrain.
2. Measure the azimuth to the target.
3. Plot the azimuth on the map or select the appropriate ray on the observed fire fan.
4. Estimate the range to the target.
5. Analyze the terrain along the observer-target line in the vicinity of the target.
6. Plot the target location and determine the grid coordinates.

In October, 1967, CDEC conducted Experiment 31.1 to evaluate FO performance using different equipment under various conditions. One finding was that a properly trained FO using a hand-held laser rangefinder could determine ranges within 10 meters of the actual range. A second finding was that an FO not aided with a rangefinder usually miscalculated ranges by 10 to 20 percent of the range estimated, and this was by far the largest component of target location error.

The "Army Training Study—Forward Observer" in October 1978 evaluated 124 FOs, officer and enlisted, from nine battalions at Fort Carson and Fort Hood to determine their ability to locate themselves and locate targets and correlated this to their unit training in observed fire. On the average, the FOs could not meet ARTEP standards for target or self location. The target location errors ranged from 400 to 700 meters, and self location errors were from 300 to 400 meters. By examining the unit training programs, the researchers found that relatively little time was spent on observed fire training. NCOs in MOS 13F were not fully qualified in that specialty, because most of them were formerly in MOS 13E, where little emphasis was placed on observed fire training. Most of them had not been able to receive training in their new MOS.

There is definitely a problem. Based on the above studies, FOs cannot locate targets accurately enough to fire for effect on the first round. Since the FO is trained and evaluated in a local impact area, he becomes very familiar with the area after a few months and probably knows the eight-place grid coordinates to most of the targets. How well could he locate himself or targets in an unfamiliar area? Ideally, the FO should be able to locate himself and targets within ARTEP standards on any terrain worldwide.

What is being done to solve this problem? In USAFAS, recommendations have been made in several areas to improve FO performance. One is to teach more map reading in a field environment. Once the fundamentals have been learned in the classroom, the students should be taken to the field, where an instructor, experienced in terrain association, points out terrain features and shows the students, in detail, how that terrain feature is correlated to what appears on the map. Another recommendation is to set up a range estimation training area. Facsimiles of various Threat vehicles and equipment would be set up at different distances over varying terrain, and students would estimate ranges to the targets. The instructor would have a list of the surveyed ranges to the targets to give the FOs an idea of what common items of military equipment look like at ranges encountered on the battlefield. Reducing range estimation errors would drastically reduce target location errors.

The Army Research Institute Field Office at Fort Sill has initiated a contract to study the backgrounds of FAOBC students to determine the profile for a successful forward observer. USAFAS hopes to find the essential skills and traits needed for accurate self and target location, and the gunnery course of instruction will be tailored accordingly.

Another recommendation is that USAFAS examine the map reading instruction given by various commissioning institutes—USMA, ROTC, and OCS. The course of instruction in FAOBC is based on the assumption that the newly commissioned officer has already received sufficient map reading instruction, so only a refresher course is given by the Counterfire Department. This may not be true, and perhaps USAFAS can determine whether enough map reading is taught before commissioning. If not, USAFAS, through TRADOC, could establish a special artillery-oriented block of instruction for cadets who are to be commissioned in the Field Artillery.

If these recommendations are put into effect, the lieutenants arriving in artillery units should be better able to engage targets with first round fire for effect, because of more accurate target locations. However, there are several steps a commander can take to improve the performance of the observers in his FISTs. The underlying skill for any FO is map reading and terrain association, which should be taught and constantly reinforced in a field environment, instead of in the classroom. Only through constant practice will terrain association become an ingrained skill. A known distance range should be set up for range estimation. The same junked auto bodies and military vehicles used in the impact area can be set up on a range, such that the FO would be estimating ranges to targets uphill, downhill, over flat terrain, and over rolling vegetated terrain. The FO would learn how these factors affect range estimation. In target and self location, FOs should be encouraged to follow the "thought process" taught in FAOBC. This makes target and self location a methodical process, rather than a rough guess.

Improving target and self location requires few resources, except time. No live fire, either full caliber or subcaliber, is required. The FOs take maps, compasses, and binoculars to a field location, preferably not the impact area, where the instructor with a trig list points out targets to be located. The observers' target locations are compared to the surveyed locations, and the instructor points out mistakes and techniques for improving target location. The observers must always know their own location as they move. One afternoon of this type exercise will provide more training in target and self location than a three-week live-fire exercise in the impact area. On a battalion level, competition can be set up between FISTSs, with awards or recognition for the smallest error in target and self location.

Training benefit is limited only by the trainer's imagination and the commander's willingness to get his FIST chiefs and FOs out of the supply room and motor pool into the field. Considering the target acquisition capabilities of our potential enemies and our ammunition constraints, first round fire for effect is essential. This is possible only through accurate target and self location by the forward observer.

Recognizing the lack of training time that FAOBC students have had to practice the two very important skills of self location and terrain analysis, the Counterfire Department is expanding and revamping its portion of the FAOBC map reading Program of Instruction (POI) to place more emphasis on these subjects. FAOBC classes 8-79 and 9-79 will receive an expanded 30-period block of instruction which is an increase from the 19 periods taught in the past. The 30 periods will include eight periods of classroom instruction, a two-period examination, extra instruction as required, and then 20 periods of field application to include land navigation by foot and motor movement. The previous 19-period POI was oriented almost exclusively toward target location. If the expanded POI proves successful in increasing the students ability to read a map, locate himself, and locate targets, it will become a permanent part of the FAOBC POI.—Ed.

CPT Michael B. Kelly is assigned to the 2d Battalion, 321st Field Artillery, 82d Airborne Division.

Commanders Update

COL John M. Shalikashvili
1st Armored Division Artillery

COL James R. Broome
75th Field Artillery Group

COL Wilson A. Shoffner
214th Field Artillery Group

LTC Robert E. Brown
6th Battalion, 9th Field Artillery

LTC John J. O'Keefe
1st Battalion, 10th Field Artillery

LTC Charles M. Hood
6th Battalion, 10th Field Artillery

LTC Clifton A. Potter
1st Battalion, 12th Field Artillery

LTC James L. Green
2d Battalion, 17th Field Artillery

LTC David R. Elliott
3d Battalion, 18th Field Artillery

LTC John M. Grimshaw
2d Battalion, 20th Field Artillery

LTC Robert J. Irving
1st Battalion, 27th Field Artillery

LTC Harold F. DeBolt
1st Battalion, 35th Field Artillery

LTC Joseph D. Szwarckop
1st Battalion, 78th Field Artillery

LTC David J. Sholly
2d Battalion, 320th Field Artillery

LTC Richard W. Wharton
2d Battalion, 321st Field Artillery

LTC James E. Williams
5th Composite Training Battalion

LTC Francis W. Farrell Jr.
Staff and Faculty Battalion
Fort Sill, OK

LTC Lawrence T. Sughrue
USA Support Group-JSA
Korea

Samuel Ringgold and the "flying batteries"

by COL (Ret) Robert M. Stegmaier

Samuel Ringgold

General Zachary Taylor faced these unfavorable odds at Palo Alto on 8 May 1846: personnel, 6,000 to 2,200; cannon, 12 to 10; cavalry, 1,500 to 350. A compensating factor was needed if victory was to be achieved. Would the latest innovation in Army organization, the "flying battery," furnish enough maneuverability and firepower to overcome the Mexican odds?

At Palo Alto were Ringgold's and Duncan's light artillery companies. Since 1839 both units had been trained as "flying batteries," named because of their mobility and rapid rate of fire, and copied from Napoleon. Both artillery commanders were anxious to display to General Taylor (an infantry-indoctrinated leader who believed bayonets won battles) the outstanding offensive power the new units could furnish.

Captain (brevet Major) Samuel Ringgold was especially enthusiastic. He had furnished the push behind the adoption of this mobile artillery. Ringgold, son of a Revolutionary War general and grandson of another general, entered the United States Military Academy in 1814 at age 14 and graduated fifth in his class four years later. General Winfield Scott selected him as his aide from 1818 to 1823. Ringgold chose artillery as his basic branch and was ordered to France and England to observe advanced military techniques. He returned from Europe, convinced that Napoleon's revolutionary "flying batteries" were needed in our Army. With the support of his powerful friend, fellow artilleryman General Winfield Scott, he finally accomplished his purpose in 1839 when Congress authorized four light artillery units to receive horses.

First to be selected was Company C, 3d Artillery, commanded by Captain Ringgold. Others selected were Company K, 1st Artillery (CPT Francis Taylor), Company A, 2d Artillery (LT James Duncan), and Company B, 4th Artillery (CPT John Washington). Ringgold's unit became the model in maneuver, mobility, and rapidity of fire that the others imitated and tried to surpass. His Americanized version of the manual, *French Instructions for Field Artillery, Foot and Horse*, became the bible of all four organizations.

Ringgold devoted all his time and energy to making his unit the most efficient in the Army. As one observer expressed it: ". . . he doated upon it, as a parent upon his first born, and succeeded in inspiring the same enthusiam in the breasts of every individual under his command."

Taylor, Duncan, and Washington, the other "flying battery" commanders, became imbued with Ringgold's competitive spirit, each intent on demonstrating the esprit, outstanding effectiveness, and mobility of their new organization.

The war in Florida (1835-42) offered no opportunity for these mounted artillery units to show off — roads were few, swamps flourished, and ambush and hit-and-run were favorite Seminole tactics. Washington's battery was sent to Florida, but the unit was used mainly as infantry.

Ringgold's "flying battery" was stationed at Fort McHenry between 1839 and 1846 and repeatedly demonstrated the quick movements of the guns and caissons, the rapid firing of the cannon, and the efficient method of limbering and unlimbering. As one writer expressed: ". . . it seemed almost the work of magic art, and all present pronounced it the very excellence of military maneuvering." Battle alone was the ultimate and only experiment to prove the efficiency of the new organization beyond a doubt.

Not until the Mexican Army was faced at Palo Alto did the "flying artillery" have a chance to display its mettle in combat. Would these units, Ringgold's and Duncan's, be able to prove their optimistic claims? Would they be able to counter with firepower the tremendous odds in favor of Mexican victory?

General Taylor, ever courageous in action and always stressing attack, halted his troops just out of Mexican artillery range — 700 yards away. He had his troops rest, fill their canteens, and prepare for combat.

Ringgold's and Duncan's batteries moved forward 100 yards in front of the infantry. Lieutenant William Churchill with two 18-pounders remained on the main road in line with his infantry support. Mexican artillery initiated the battle. The American cannon, superbly manned, fired eight well-aimed shots to each one of the enemy's. American artillery concentrated on the mass of Mexican horses and soldiers, while the Mexican artillery concentrated on counterbattery fire.

Of this early phase of battle, General Ulysses S. Grant recorded in his memoirs that the infantry stood at order arms, cheering the clearing effect of the artillery fire upon the enemy ranks and watching the incoming Mexican round shot, so as to sidestep the bouncing shot after it hit the ground.

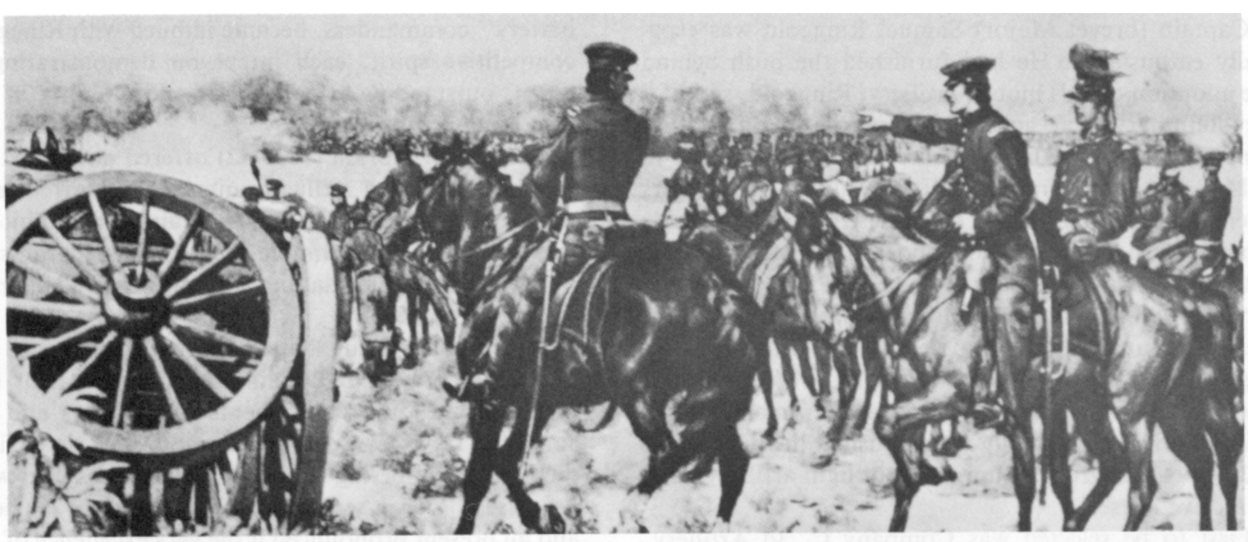
Mexican General Arista had chosen the open prairie of Palo Alto to exploit his preponderance of cavalry. He now moved his lancers to outflank the American right. Taylor counted by ordering the 5th Infantry, reinforced by two guns of Ringgold's battery (under command of Lieutenant Ridgely), to counter the threat. When the lancers moved farther northward, the 3d Infantry was dispatched to extend the defense to the right.

COL David E, Twiggs, in command of the right flank, officially reported the following: "Seeing their [Mexicans] movement frustrated at this point, the lancers commenced a retreat in good order, Marching apparently by squadrons, when First Lieutenant Ridgely, of Major Ringgold's battery, assisted by brevet Second Lieutenant French, opened a fire upon them, and scattered them in all directions. . . . In the meantime, Major Ringgold, with the remaining two pieces of his battery, continued to play on the enemy with great success. . . ."

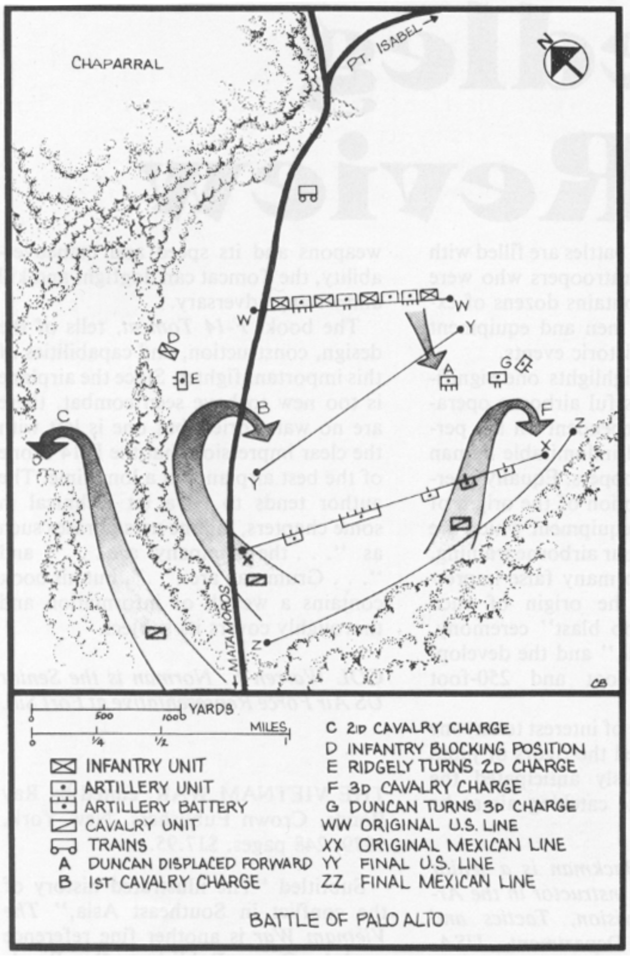
"Major Ringgold pointed the guns with his own hand and, with unerring precision, directed the shot not only to groups and masses of the enemy, but to particular men in their lines . . . to use his [Ringgold's] own words, 'he felt as confident of hitting the mark as though he had been using a rifle.' The infantry was formed to his rear as his support and cheered rapturously the brilliant movements and destructive execution of his battery. . . ." For three hours, Ringgold, with his two advanced pieces, continued to pour lead upon the opposing ranks.

On the left, Duncan's battery, in its exposed position, blew holes in the opposing massed ranks. Dry grass in front of the guns caught fire from the hot muzzle blasts, and huge masses of white smoke obscured all forward vision.

At this time, the battle ceased for about an hour and the Mexicans withdrew to a line affording greater protection.



Major Samuel Ringgold (pointing) gives orders to his "flying artillery."



(Map sketch by Cindy Burleson)

The American 18-pounders moved forward almost to the original Mexican line on the main road, and Ringgold took up position 600 yards from the enemy.

When combat resumed, General Arista chose Ringgold's advanced position for his cavalry attack, and the Mexicans intensified their artillery fire on Ringgold's guns. General Taylor ordered his reserve, the battalion of foot artillery under LTC Thomas Childs, to protect the guns. The rifle fire, plus the explosive barrage from the "flying battery" and the 18-pounders, beat back the attack.

Prior to darkness, General Arista, whose troops were on the American left where Duncan's battery was located, tried to move. Duncan, having heard the fierce fire fight to his right, with smoke obscuring his view, limbered his guns and was preparing to move to assist the other batteries. Fortunately, glimpsing the enemy movement, he utilized the mobility of his guns, half-circled, unlimbered, and poured deadly fire into their midst. As written in the book *Daring Deeds of American Heroes:* "Every discharge was fearfully destructive, mowing down whole ranks of the enemy. They could not long stand under the murderous fire, though they continued to advance with great firmness for a time. They were driven back in confusion . . . and commenced a precipitate retreat. . . ." Nightfall brought an end to the action.

Of this battle, General Taylor, no longer skeptical of artillery, officially reported: "Our artillery consisting of two 18-pounders and two light batteries was the arm chiefly engaged, and to the excellent manner in which it was maneuvered and served is our success mainly due."

K. Jack Bauer in *The Mexican War 1846-1848* writes: "The American success was due to the artillery. . . . The battle was won by Duncan, Ringgold, and their cannoneers, who accounted for the great disproportion in casualties between the two forces." During the battle the Americans had nine killed in action and 44 wounded, whereas the Mexicans had 200 killed and 400 wounded.

Disparity in manpower had been overcome by the mobility and accurate, rapid firepower of the "flying batteries."

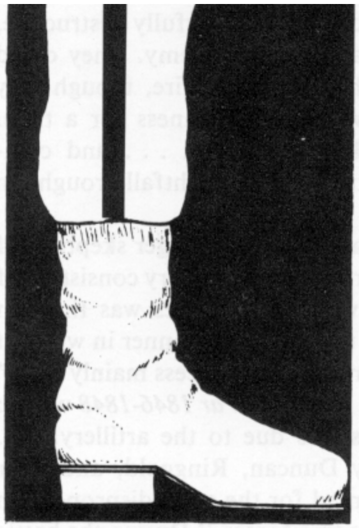
As stated earlier, Major Ringgold had made the success of the "flying batteries" his life's mission. In this battle, in which the units proved his optimistic claims, Ringgold was mortally wounded by a Mexican cannon ball in the last moment of the battle. His words to those standing nearby were: 'Don't stay with me; you have work to do — go ahead." When he finally consented to be taken to the rear on a caisson, he requested: "Be careful to get an empty caisson, as you may require all your ammunition." Despite all medical efforts, he died the following morning, knowing his beloved "flying battery" had been tested and had demonstrated its efficiency in battle.

In Baltimore, the capital of Ringgold's native Maryland, a memorial succinctly summarized his career: "In the flash of his fame he has died as he lived — for his country. The offering doubtless was a glad one. He desired no better fate than such a death; he could leave no richer inheritance than such an example. . . . His memory will be gratefully cherished so long as honour has a victory, freedom a hero, or his country a name."

Even in his last moments, the ardor of the soldier remained with Ringgold. To a friend who was paying a final farewell, Ringgold remarked: "Tell Randolph (Lieutenant Ridgely, his second in command) to look well to his pieces and see that his harness is complete. The smallest defect may destroy the efficiency of a piece."

For this intrepid artilleryman, his thoughts, as every in life, were to the well-being of his beloved "flying battery."

COL (Ret) Robert M. Stegmaier, a regular contributor to the *Journal*, lives in Sun City, AZ.



Redleg Review

PARATROOPER, by Gerard M. Devlin, St. Martin's Press, New York, 1979, 693 pages, $20.00.

On 30 November 1939, the Russians launched a massive attack against Finland with 30 divisions. As part of this attack, small detachments of parachute infantry were dropped near the town of Petsamo, Finland. This was the first reported use of parachute units in combat and it generated considerable interest within the US Army. On 25 June 1940, the order was issued for the 29th Infantry to provide a platoon of volunteers to begin testing this means of employing troops in combat.

Mr. Devlin relates the birth of our paratroopers and goes on to detail the emergence and maturation of our airborne units from one lowly test platoon in 1940 to division-sized units in just 26 months. Included in *Paratrooper* is an account of the growth of our airborne field artillery with the activation of a Parachute Test Battery in the summer of 1942. The battery was equipped with the "pack 75" howitzer and was extremely successful in its initial testing, eventually forming the nucleus of the first airborne field artillery battalion, the 456th Parachute Field Artillery. Twelve field artillery parachute battalions were activated during the war.

The major portion of the book is dedicated to a detailed account of all airborne operations conducted in Europe and the Pacific during World War II. Each chapter, which is devoted to one particular operation, begins by setting the scene in terms of the significant events leading up to each battle. All operations have been researched in infinite detail. Accounts of battles are filled with anecdotes from paratroopers who were there. The book contains dozens of excellent pictures of men and equipment involved in these historic events.

Devlin's work highlights one significant factor—successful airborne operations are largely dependent on the personal initiative and indomitable human spirit of our paratroopers. Equally interesting is his description of the origin of the traditions and equipment which are an integral part of our airborne training. His book clears up many false impressions concerning the origin of such things as the "prop blast" ceremony, the "Geronimo yell," and the development of the 34-foot and 250-foot towers.

This book will be of interest to anyone who has experienced the rigors of jump school and anxiously anticipated the jerk of a parachute catching air as he exits an aircraft.

CPT Rodney J. Backman is a senior parachutist and an instructor in the Artillery Tactics Division, Tactics and Combined Arms Department, USAFAS.

F-14 TOMCAT, by Arthur Reed, Charles Scribner's Sons, New York, 1978, 112 pages, $9.95.

When congress dropped the US Navy from the TFX multipurpose fighter program, the Navy was in need of a fighter for fleet air defense. A request for design proposals was sent to the aircraft industry in 1968. Grumman Aircraft Corporation, the designers of the naval version of the TFX, submitted a design based on the best features of the F-111, but specifically tailored for Navy use. The design resulted in one of the best air superiority fighters in the world—the F-14 Tomcat.

The F-14 is a two-engine, swing-wing, carrier based aircraft. It packs an awesome punch with its six Phoenix missiles, which give it the capability to simultaneously attack six different aircraft at long range. It also packs sparrow and sidewinder missiles, and a 20-mm vulcan cannon. With these weapons and its speed and maneuverability, the Tomcat can dogfight and kill almost any adversary.

The book, *F-14 Tomcat*, tells of the design, construction, and capabilities of this important fighter. Since the airplane is too new to have seen combat, there are no war stories, but one is left with the clear impression that the F-14 is one of the best airplanes in a long time. The author tends to be a bit technical in some chapters, and he uses phrases such as ". . . the company are . . ." and ". . . Grumman are . . .", but his book contains a wealth of information and thoroughly covers its subject.

COL Warren E. Norman is the Senior US Air Force Representative at Fort Sill.

THE VIETNAM WAR, edited by Ray Bonds, Crown Publishers, New York, 1979, 248 pages, $17.95.

Subtitled "The illustrated history of the conflict in Southeast Asia," *The Vietnam War* is another fine reference work by Crown Publishers. Ray Bonds has gathered together a group of expert editors, many of whom served in Vietnam, to compile a complete history of the recent conflict in Southeast Asia. GEN (Ret) William Westmoreland wrote the Foreword.

The book contains approximately 600 photos, maps, and drawings of exceptional quality, and most are in full color. The 100,000 words represent only about half the space in the book, making this an attractive, as well as easy to read, reference. Rounding out the role as a reference, Bonds has included a comprehensive, consolidated chronology of events and brief biographies of key persons involved in the war.

Though written by "round eyes," the text is masterfully devoid of value judgments, and the Viet Cong/NVA story is told as impartially as reasonably can be expected.

LTC William A. Cauthen is past Editor of the ***Journal*** and is now the Public Affairs Officer at Fort Jackson, SC.

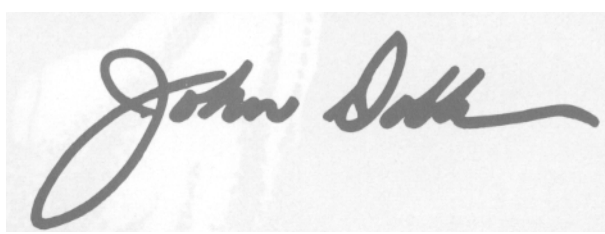
—FRAGMENTS—

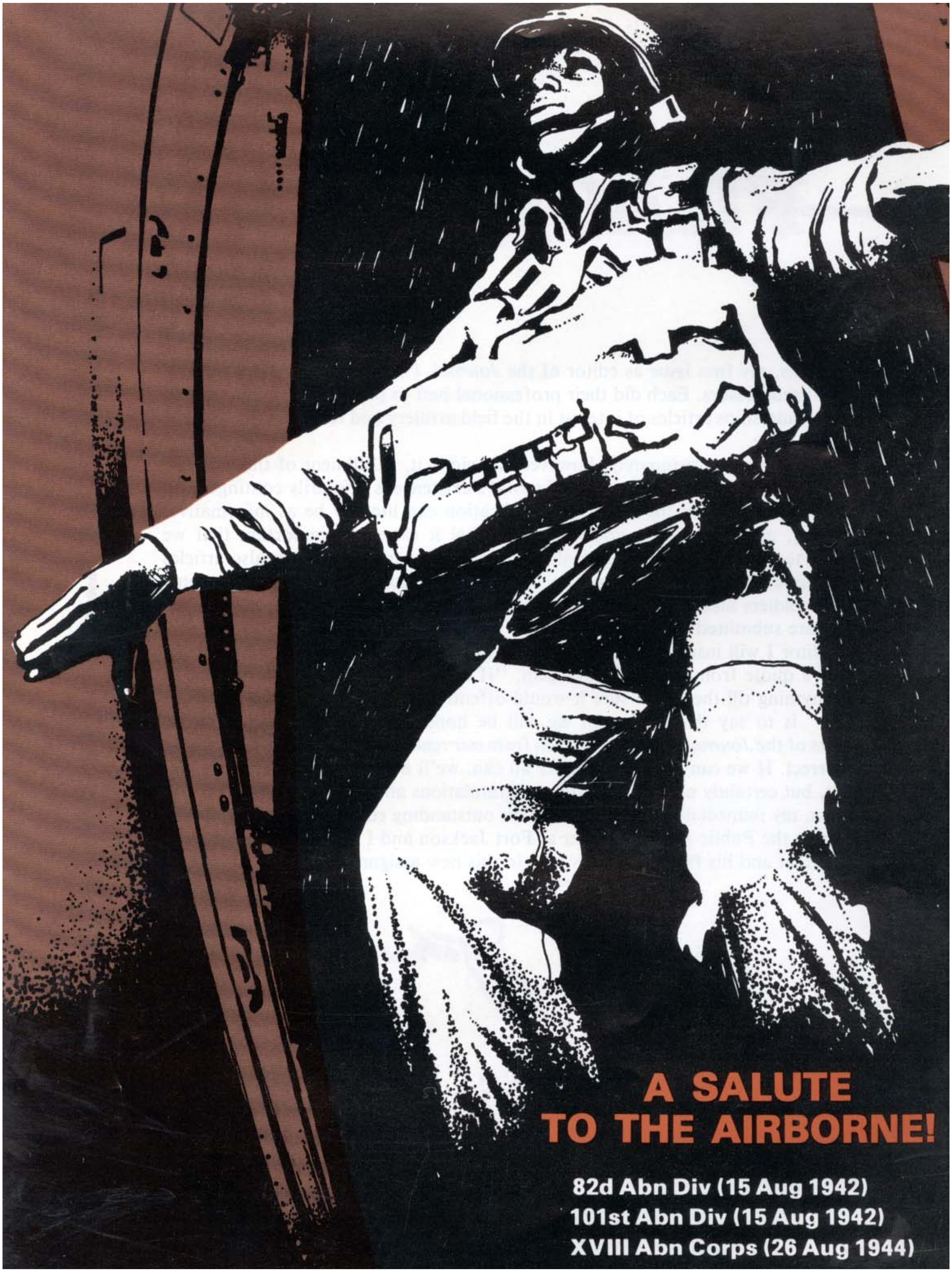
With this, my first issue as editor of the *Journal*, I follow a long line of distinguished predecessors. Each did their professional best to provide both military and civilian readerships articles of interest in the field artillery and fire support. I pledge to do the same.

Fortunately or unfortunately, however one views it, fulfillment of this promise will depend largely on *you*, since the *Journal*'s existence is primarily contingent on material received from the field. Our publication can literally be as informative, interesting, and valuable as you make it. I feel it extremely important that we continue to publish not only material supporting the Active Army but also articles and features of interest to our partners in the Reserve Components. Also, I encourage our soldiers and noncommissioned officers to write since the majority of our articles are submitted by the officer corps.

As editor I will insure that the *Journal* is as honest and credible as possible. To borrow a quote from Benjamin Franklin, "If all printers were determined not to print anything till they were sure it would offend nobody, there will be very little printed" is to say that, although we will be honest and straightforward, some contents of the *Journal* may stir criticism from our readers. Fine! If we are wrong we will correct. If we can improve, and we all can, we'll do so.

Last, but certainly not least, I offer congratulations and "hats off" to LTC Bill Cauthen, my immediate predecessor, for his outstanding editorship of the *Journal*. He is now the Public Affairs Officer at Fort Jackson and I join all artillerymen in wishing him and his family the very best in this new assignment.




A SALUTE
TO THE AIRBORNE!
82d Abn Div (15 Aug 1942)
101st Abn Div (15 Aug 1942)
XVIII Abn Corps (26 Aug 1944)