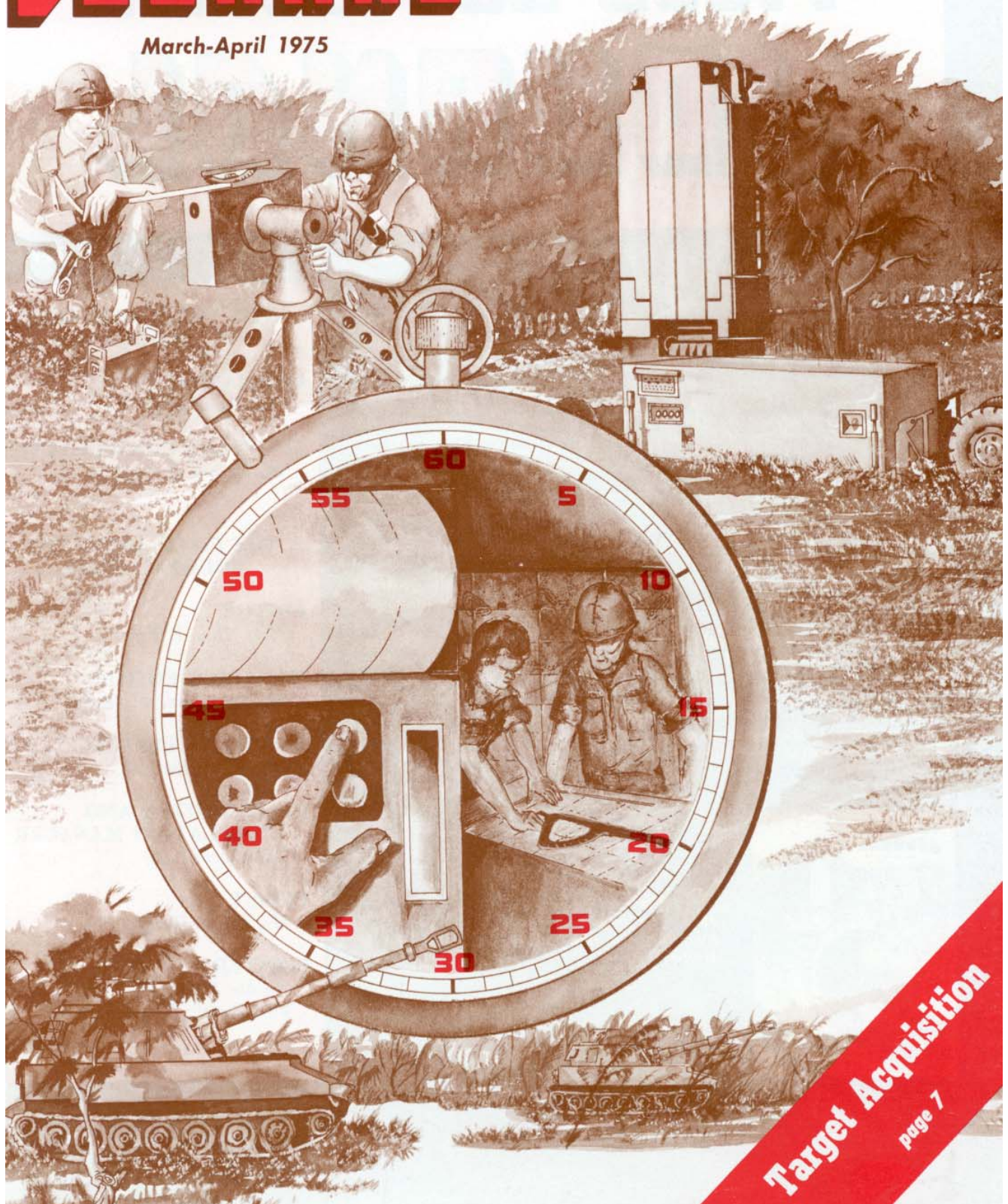


# FIELD ARTILLERY JOURNAL

March-April 1975



**Target Acquisition**  
page 7

# FIELD ARTILLERY JOURNAL

Volume 43

March-April 1975

Number 2

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 1910:

*"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."*

Unless otherwise stated, material does not represent official policy or endorsement by any agency of the US Army.

Funds for the printing of the publication were approved by the Department of the Army, 1 September 1973.

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

All letters and articles should be addressed to Editor, **Field Artillery Journal**, PO Box 3131, Fort Sill, OK 73503. AUTOVON 639-5121 or Commercial (405) 351-5121.

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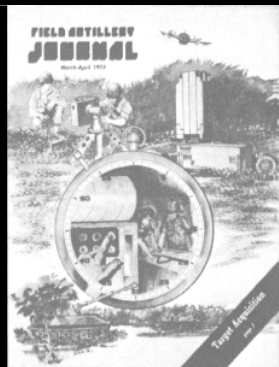
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*The spotlight of the March-April cover turns to target acquisition for the Field Artillery.*

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## *a word from the editor*

With our second year of commercial publication well underway, I thought this would be an appropriate time to welcome our new readers aboard. We know that a good many of you are retired Redlegs, thanks to the whirlwind publicity campaign initiated by Gillett Griswold and the Field Artillery Historical Association. Mr. Griswold has recently sent letters to over 7,000 ex-Redlegs and the response has really been outstanding. I am taking the liberty to quote from one letter—BG (Ret) Carl C. Bank:

The receipt yesterday of a sample copy of the revived *Field Artillery Journal*, and accompanying letters, reminded me of a life saver being thrown to a poor unfortunate about to sink for the last time.

My retirement from active service, way back in 1947, was a traumatic experience for me in that I was cut off from the usual sources of information concerning developments in my beloved Field Artillery. It was very hard on me, especially because during my active service I spent four years at the FA School, four years on the old Field Artillery Board, a period of duty as Chief of Field Artillery at Allied Forces Headquarters at Algiers, command of artillery units in both World Wars including command of the 13th Field Artillery Brigade with many French Corps and Army artillery units attached. Of course, I recognized the necessity for secrecy with respect to new developments and suffered in silence. I hoped and prayed that sometime someone would be able to bring about what has now come to pass. I will support the project within the limits of my health in my advanced years.

We have a special reason for welcoming readers like General Bank, for although we in uniform face a never-ending challenge to refine every aspect of our beloved branch, we must never lose contact with our history and retired artillerymen such as General Bank who helped shape that illustrious history. We need men like you to read our *Journals* and assist in guiding us with your vast experience and expertise.

Now to this issue. Target acquisition. Although we have touched on target acquisition briefly in past

issues, we believe we have taken a more comprehensive look at the situation in this *Journal*. COL Donald Rhea, Director of the Target Acquisition Department, has provided an article which, among other things, theorizes on a system which could optimize the control and management of all target acquisition data, the counterfire control center. COL William Harrison, Project Manager for Mortar and Artillery Locating Radars (MALOR), has given us the first good look at the new TPQ-36 and 37 radars under development. MG David E. Ott has also given emphasis to target acquisition by making it the subject of his "Forward Observations" column.

Also of considerable interest to this month's readers is the first look at a revolutionary change in the field artillery, the cannon launched guided projectile called CLGP. The USAFAS project officer for the system, LTC Charles Williams, prepared the article on the new system which received thorough coverage recently in the *New York Times*.

Exactly what will EPMS mean to the FADAC operator, the gunner, the recon sergeant and the battery commander? The answer to this question is very succinctly put in this month's interview with the officer who headed the organization that developed EPMS, COL William Hauser. A prolific writer and published author (his most recent book, "America's Army in Crisis"), Colonel Hauser is no stranger to the *Journal*, having contributed an article in our first commercially printed issue in January 1974. Attending a recent commanders conference here at Fort Sill, he granted us an extensive interview that should answer many questions concerning this enlisted management system. Special credit for illustration of the interview goes to Specialist 4 Linda Hensley of the Army-Wide Training Support Department for her excellent stipplings of Colonel Hauser. Thanks go also to Debbie Daugherty, AWTSD, for transcribing the interview.

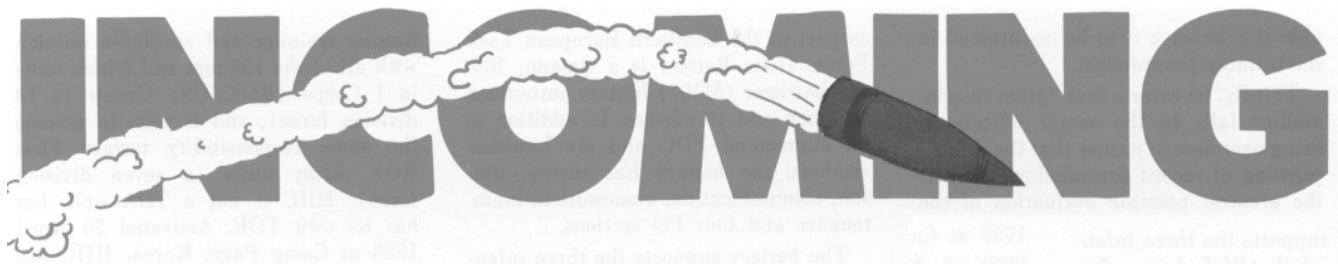
Another article which we believe rates special mention is one provided by the editor of *Infantry* magazine, LTC Thomas (Jack) Barham. If you are looking for some excellent tips about how to get along with the infantry folks as a forward observer, do not miss it.

CPT George Harmer's article, "Recycling," outlines the procedures and possible problem areas in the conversion process from Honest John or Sergeant to the Lance Missile.

COL Paul Pearson, Director of the Gunnery Department, takes a lesson on thinking big from several campaigns in World War II in his article, "Historical Precedent." Rounding out the articles is the last portion of COL Horst Toepfer's review of the Mideast

*(Continued on inside back cover)*





## letters to the editor

### Soviets

I want to congratulate you and your staff on the Russian article, "Basic Directions in the Training of Artillery and Missilemen," published in the November-December 1974 issue of the *Journal*.

I believe that the publication of such articles serves a great purpose for all field artillerymen and professional soldiers of all branches. Its greatest worth is to remind us (hopefully) that we (Americans) have not cornered the market on modern artillery (or other) techniques. Although this observation [that the Russian artillery is simple and rugged] was quite true some 30-35 years ago, it is no longer valid although it reflects the thinking of far too many senior personnel. The tragedy of this misconception is that it is passed down to younger officers and noncommissioned officers who accept it as the "gospel."

It is certainly time for all of us to recognize that the Russian soldier and the field artillery that supports him is a most formidable potential foe.

The Russian field artilleryman is striving for the same goals we have set, "to provide close and continuous fire support to the ground gaining arms, to achieve first round hits and to conduct fire rapidly." The Russian makes the same mistakes that we do as pointed out by the author on page 10, "Unfortunately, here and there officers underestimate the importance of training to conduct fire **rapidly**, or if they do conduct such exercises, they greatly simplify them and, most importantly, omit the corresponding physical stress."

The Russian field artilleryman, in short, is striving for professionalism and execution. We, the professionals, should accept this challenge and redouble our efforts to insure that the American field artilleryman of today, and tomorrow, is properly trained and prepared to meet this challenge. There is no substitute for technical and tactical knowledge; we must not accept second-rate

performances during training exercises nor should we condone those who do. The American soldier, properly led, is equal to any adversary. We, the professionals, must insure that he is properly led, properly trained and dedicated to excellence in all his (our) endeavors.

I join with field artillerymen throughout the United States Army in congratulating you and your staff on the quality of the *Journal*. I am looking forward to the next issue(s) which hopefully will include additional articles on the Russian and other foreign countries' field artillery techniques and current doctrine.

John L. Overby  
MAJ, FA  
Fort Sill, OK

I agree that Marshal Peredel'skii's article in the November-December 1974 issue of the *Journal* is "a must for all Redlegs." In it he stresses the importance of realism in training and of the development of initiative in junior commanders, and he underlines many basic principles for the effective use of field artillery: practice in different climates, gaining of artillery intelligence, perfection of deployment and survey drills, maintaining a state of readiness, knowledge of combined arms operation, good communications, speed of deployment, value of continual exercising, etc.

This is of great interest as it shows that all Saint Barbara's disciples are preaching the same gospel. However, a short analysis of some of the problems which face us all may be worth recording to show why it is sometimes so difficult for us to succeed all of the time all at once, as he appears to expect, and indeed perhaps to stress why it is undesirable in training to try to do so.

He states that it is not by accident that the fortunate units under the command of I. Morozov and others are good at specialized training and able "to deliver effective missile strikes and precise artillery fire," but that their undoubted skills are due to the fact that their

commanders "attach great importance to tactical training and field training." Now, most of us find that the teaching of technical skills and field training are usually conflicting requirements. In order to get the realism which is certainly of great tactical value, it is usually necessary to get away from the well known military environment of an approved live firing range.

On the other hand, one may only prove the technical aspects of field gunnery by pulling the lanyard and seeing the result and this can only be done on the ranges. There is certainly a place in the programme for both, but all too seldom an occasion which lends itself to the practice of the two at the same time.

He further states, I am sure quite correctly, that "rocket strikes or artillery fire are planned without the necessary analysis of enemy data." Again in peace time the only realistic way of confronting a commander with anything like the miscellany of conflicting factors which will face him in war is to stage two sided exercises, i.e., exercises with an enemy deployed on the ground. Such exercises, of necessity, lengthy, large scale and demanding a sophisticated umpire force are expensive both in monetary as well as in manpower terms. However, perhaps most important is the fact that they can also be very counterproductive to the many junior officers and soldiers involved who, because for safety reasons cannot be subjected to anything approximating to actual combat conditions, become bored. On occasions when such exercises are staged too frequently, junior commanders (whose initiative is undoubted but whose imagination can sometimes be lacking) usually comment that their men's time would more profitably have been spent on minor unit, technical or individual training. For all these reasons, therefore, the practice of senior commanders in the analysis of realistic "enemy data" in peace time may not take place as often as might be desirable

if a balance is to be maintained in the training programme.

Thirdly, he asserts that "great responsibility falls to the senior officers of firing exercises to ensure that the accomplishing of record fire missions permits the greatest possible evaluation of the gunners' training and at the same time serves as a new step increasing his artillery-gunnery mastery."

Certainly we should agree that on each and every occasion we take the guns out we learn something new, but an exercise must be designed from the start either as a testing or a teaching vehicle. If it is designed to test a unit, failure will be countenanced and the end result is either a unit chalked up on the commander's board as one which is ready for combat or one upon which he must lavish more time and attention. If the exercise is tailored to teach, then it will be of more value both militarily and economically to repeat certain phases until they are performed properly. Such an exercise will be recorded by a commander not as a success or failure but as a further step in the unit's experience/education. Here again an appropriate number of the two types must be programmed, but the temptation to achieve both on the same occasion avoided.

In conclusion, I think it is fair to say that we all recognize and accept the objectives which the author rightly set; but what we should have welcomed was a little more discussion of the problems which their achievement poses and which he courteously but mistakenly assumes we can so easily solve.

LTC S. Love  
British Liaison Officer  
USAFAS  
Fort Sill, OK

### **Sarantakes Refuted**

MAJ John E. Sarantakes (November-December 1974 *Journal*) is not correct in his claim that Company E, 1st Battalion, 29th Infantry, is the only field artillery unit now assigned to an infantry battalion. He was closer to the mark when he cautiously said ". . . probably the only one . . .," for it is my good fortune to command Battery D, 1st Battalion (Abn), 509th Infantry, Battalion Combat Team, Delta Battery and the rest of the BCT formed in June 1973 and deployed to Vicenza, Italy, as

part of the Southern European Task Force. Delta Battery is a six-gun, 105-mm howitzer (M102) battery authorized 103 men and 10 officers. In addition to an augmented FDC and six howitzer sections, the battery has survey, liaison, communication, ammunition, maintenance and four FO sections.

The battery supports the three infantry companies of the BCT during frequent local airborne FTXs and during occasional airborne FTXs in other countries. The battery is part of the Allied Command Europe Mobile Force (Land) Artillery, and as part of this multinational force, together with Belgian, British, Italian, Canadian and German batteries, trains to form a cohesive and combat effective Force Artillery. Additionally, the battery goes to Grafenwoehr, Germany, twice a year for a month-long live fire exercise.

Delta Battery is the only airborne artillery unit in Europe and a part of the only airborne Battalion Combat Team in the US Army. The battery is proud to train with professional airborne infantrymen and will continue to provide fire support and lend dignity to the BCT.

Fredrick E. Van Horn  
CPT, FA  
Commanding

*Airborne!—Ed.*

I have just completed my first reading of the November-December (1974) *Journal*, and wish to state my opinion that with each successive issue, its quality has improved beyond any reasonable expectation. Of the many excellent articles in the current issue, two have especially drawn my attention.

Major Sarantakes ("Company E, 1st Battalion, 29th Infantry?") has written an interesting article about an unusual unit. However, I must challenge his claim as the only active field artillery unit officially known as a company. The 4th US Army Missile Command, a field artillery unit, has three organic companies. My 4th Support Company and 226th Signal Company present no challenge to Major Sarantakes, but Headquarters and Headquarters Company clearly is a field artillery unit officially known as a company. Commanded by a field artillery captain, it includes the Weapon Support Detachment, which boasts seven field artillery officers and many highly skilled Redlegs in MOS 13B40M5M6. These

troops have a continuing training and readiness mission with all of the 155-mm and 8-inch units in I Corps (ROK/US) Group (a 13 division force), and is soon to assume the same responsibility toward First ROK Army units (a seven division force). HHC is not a TDA unit, but has its own TOE. Activated 26 April 1958 at Camp Page, Korea, HHC has been an artillery company for many years and is still at Camp Page. As the Army's only surviving Missile Command, 1st Battalion (Honest John), 42d FA and 3d Battalion (Sergeant), 81st FA, we are proud to be the last of a breed.

Major Ellis ("Beyond Deterrence") has ably opened a seriously neglected subject. As he points out so well, FM 100-30, the only manual published by the Army explicitly on the subject of tactical nuclear operations, is not of much help as it contains no guidance on fire support, fire support planning or fire coordination. The subject of tactical nuclear operations has received much study at the Army War College, in the former CONARC and CDC, in the DA Staff, in OSD and by a large number of civilian institutions (the latter is the source of most of Major Ellis' bibliography).

Most of these studies decided that the problem is bigger than all of us and that there is no such thing as tactical nuclear warfare without close coupling to strategic nuclear warfare. Those few who did claim to see a glimmer of hope were quickly swept under the rug as they stated a need for drastic changes in organization, tactics and hardware. It is, indeed, refreshing to see such an article written by an artilleryman while assigned to the Artillery School. Congratulations, Major Ellis.

Keep improving the *Journal*.

Lynwood B. Lennon  
COL, FA, Commanding  
4th USA Missile  
Command

### **Buckle**

I have now been in the Marine Corps FMF since the end of May after graduating from the Fort Sill Officer Basic Course. Admittedly, we do not own any of the M102 artillery pieces, but the training I received on the M101A1 was invaluable.

Since then, I have obtained a webb belt dated earlier than any previously

seen by myself. On the ends of the belt stamped on the brass size changers is a bullet with "MILLS" on the inside and underneath a "PATENTED APR 18, 1905-JAN 29 1901."

The buckle, made of brass, is a round disk with raised "US" and fits into the center of the other buckle. But, to my real surprise, on the back part of the belt is a metal stamp showing, I believe, the Field Artillery crossed cannons. Can you tell me anything about the belt and the significance of the stamp?

I read your magazine regularly because the articles are quite beneficial to a Marine Corps junior artillery officer attempting to keep abreast of artillery achievements.

Barry L. Smith  
FOX Battery, 2d Battalion  
11th Marines, 1st Marine Division  
Camp Pendleton, CA

*According to the Field Artillery Museum, the buckle was issued to coastal artillery noncommissioned officers around 1910. The stamp on the rear identifies the wearer and his unit.—Ed.*

### Points Raised

In regards to the article "The 'Proud Americans' Claim LANCE First" in the November-December 1974 issue, I would like to set the record straight in two respects.

The first and more important of these respects is the description of the rigging method used in lifting the Lance Loader-Transporter M688 and the Lance Launcher M752. The rigging configuration stated in the article, namely a combination of two 12-foot slings in the front and two 16-foot slings in the rear, is not the configuration that was used to accomplish the lift. The method used was, in fact, four 12-foot slings attached two apiece to each of the rear lifting eyes by means of two medium clevises. Connected to these slings were four 3-foot slings attached by two Type 4 clevises. The front of the carriers was slung with four 16-foot slings, attached two apiece to each of the front lifting eyes and again attached by two medium clevises. All of these slings were connected by two 3-foot doughnuts that were closed by two Type 4 clevises. This arrangement gave the carriers a slightly nosedown attitude in flight which enhanced overall aircraft stability (see

TM 55-450-19). The reason four 12-foot, four 3-foot and four 16-foot slings were used was to bolster safety precautions due to the fact that this was the first such lift of the carriers to our knowledge. It is now believed that these numbers could be halved, still using all four lifting eyes, without endangering the loads.

The second matter I would like to set straight is the matter of who actually made the lift. The lift team was comprised of three elements. The first of these was comprised of the 1st (2LT Mark M. Morrison commanding) and 2d (1LT Richard L. Durden commanding) Firing Platoons and a portion of the C Battery A&T Platoon (1LT Richard T. Freeman commanding, SFC Claud A. Harp, on-scene commander). CPT Paul V. Passaro, C Battery commander, was in overall command of this element under the guidance of LTC Woolf P. Gross, Commander, 1st Battalion, 32d Field Artillery. The second element was a USAREUR rigging team directed by SGT William Spurgeon. The last, but by no means least, element was the four CH-47C aircraft and crews provided by the 205th "heavy airlift" Aviation Company, MAJ George E. Twiggs, liaison officer. Enough cannot be said in praise of the professionalism of these last two elements, without whose assistance the entire project would not have been possible.

In closing I would like to say that the *Field Artillery Journal* stands in the forefront of all similar professional military journals. Thanks to your efforts, Redlegs all over the world are gaining much needed information that otherwise would go by the wayside. Keep up the tremendous work!

Mark M. Morrison  
2LT, FA  
C Battery, 1st Bn, 32d FA

### Marines

We welcome the *Journal* every two months with professional enthusiasm. We appreciate being on the distribution. I especially enjoyed the article "The Greatest Gun" in the May-June (1974) issue. My lieutenants seconded the School's new approach to observer training described in the latest issue.

I am CO of Battery I, 3rd Battalion, 12th Marines. The battery just returned to Okinawa from a four month deployment in the west Pacific. Calls were made at

Hong Kong, Singapore and Subic Bay in the Philippines. We finished the deployment by participating in a Marine Amphibious Brigade landing exercise in the Philippines.

Just a passing thought about the *Journal*: With very little trouble you could round out your continuing "Commanders Update" by listing the "other" US artillery commanders.

Robert B. Newlin  
CPT, USMC

*Your point is well taken. With the kind assistance of the USAFAS Marine Liaison Office we have obtained the names of the senior Marine FA commanders. See page 36.—Ed.*

### More Greatest Gun

I was particularly interested in the story about the greatest gun (May-June 1974 *Journal*) written by MAJ Robert Edwards. In the *Field Artillery Journal* for September 1945 you will find an in-depth story about the gun written by my husband, [the late COL (Ret) Frederick B. Porter] after he had FOUND it while he was in Germany. Please go back in your file and find his story and compare it to Major Edwards' story. He made many photographs of it, some of which are printed with his story, others I have here.

I thought you might be interested. My husband was stationed at Fort Sill for five and a half years, had the FA School and the Motor School. He also served on the Field Artillery Board at Fort Bragg, was a liaison officer at Aberdeen Proving Ground and Plans and Training at Fort Monroe after we returned from Japan.

I think I have a distinction, too: the old *Field Artillery Journal* bought and used several of my stories, probably the only woman in the service to make it.

Rosalee Porter  
Colorado Springs, CO

*The article by your late husband provided background information for Major Edwards during the research of his article.—Ed.*

### Former Editor

Your revived *Field Artillery Journal* . . . has been read with much interest. It has been so many years since I had

*(Continued on page 58)*



TC 6-20-2  
*DRAFT EDITION*  
 Mar 75

## IMMEDIATE SUPPRESSION WITH A DEDICATED BATTERY

TC 6-40-1  
*DRAFT EDITION*  
 Mar 75

## MODERN BATTLEFIELD GUNNERY TECHNIQUES

TC 6-50-1  
*DRAFT EDITION*  
 Mar 75

## FIRING BATTERY OPERATIONS

Three new draft edition training circulars (TCs) are off the presses and on the way to Field Artillery units worldwide (January-February 1975 *Journal*). The TCs were released by the Field Artillery School 31 March and units should begin receiving them soon.

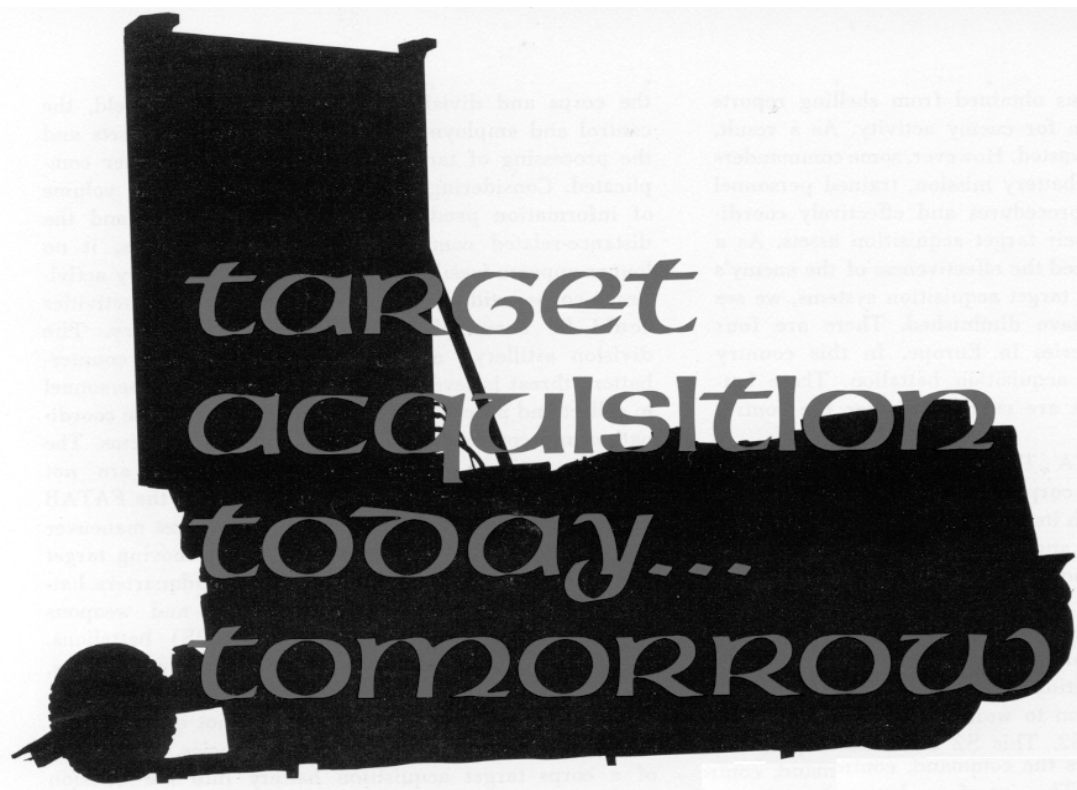
Immediate Suppression with a Dedicated Battery, TC 6-20-2, elaborates on TC 6-20-1 (Suppression of Direct Fire Weapons, already in the field) by explaining when and how an FA battery can be dedicated to provide more responsive suppressive fires to a maneuver company/team. Techniques include procedures for transition to and duration of the dedicated role; fire planning to include a new method for using the gridded thrust line template; short calls for fire and calls for fire from maneuver personnel acting as observers; duties of personnel; and items for commanders to consider before deciding to dedicate a battery. Artillerymen and maneuver commanders must understand this addition to current doctrine to optimally configure the combined arms team for a movement to contact.

Modern Battlefield Gunnery Techniques, TC 6-40-1, introduces new FA doctrine for providing more responsive and effective fires in any tactical situation on the modern battlefield. It presents FDC and FO techniques which can be used to improve the artillery system and tradeoffs involved in using other techniques including how to: manually compute initial data faster than FADAC; optimize effect on the target by surprise/massed fires, proper volume of fire and best munition selection; improve accuracy and survivability by avoiding/reducing registrations; engage irregularly shaped,

dissipating or large targets; and handle multiple missions (FO and FDC). Also explained are the FDC procedures to be used by a dedicated battery.

Firing Battery Operations, 6-50-1, describes innovative procedures and techniques to enhance responsiveness and provides means to improve survivability. This includes elimination of the XO post to avoid a bottleneck in the transmission of fire commands, permitting the battery XO to be at the critical point during periods of peak activity. Fire commands have been streamlined and "Hot" platoons designated to reduce delay in firing. Survivability has been stressed by offering new techniques for movement, occupation and hardening of position and deception measures. New concepts on battery defense, establishment of a battery operations center (BOC) for control and service as an alternate FDC and new communication handling procedures all give the battery immediate responsive and staying power in combined arms fire support. Also explained are firing battery procedures for a dedicated battery.

New doctrine from these TCs has been incorporated into resident and nonresident instruction originating at the School and into the 155-mm SP direct support battalion ARTEP, soon to be tested. Review of TC content from the field is an imperative element in the success of the draft editions. Comments should be addressed to: Commandant, US Army Field Artillery School, ATTN: ATSF-DOC-DL, Fort Sill, OK, 73503; or phone AUTOVON 639-4902/6304. Ideas concerning new concepts may be forwarded to: ATTN: ATSF-AC-MBT; or phone AUTOVON 639-5103/5562.



## by COL Donald M. Rhea

Today, much thought is being given to the battlefield of the future, and our doctrine, tactics and techniques are being revised accordingly. There is a recognition that the improved weapons of today are capable of destroying any target which can be "seen" — locating the target with sufficient accuracy so that it can be attacked. Along with the improvements in weapons there has been a comparable improvement in mobility. Looking to the future, one sees even better weapons and improved mobility. The end result of the combination of these improvements will be, in all probability, a very abbreviated conflict which will last for a period of months or weeks as opposed to years as was typical of World War I, World War II, Korea and Vietnam. We must be fully trained prior to the start of the conflict because the duration will permit little time for reinforcements to arrive.

### Early Target Acquisition

Target acquisition is widely recognized as one of the more serious deficiencies in the Field Artillery. A review of World War II indicates that initially target acquisition consisted of sound ranging and visual observation. As the war progressed, the procedures for integrating target acquisition assets were developed; however, there were no new successful devices or systems introduced.

Evidence of the importance of target acquisition during this conflict was demonstrated by the formation of the Observation Branch which was a part of the Gunnery Department within the US Army Field Artillery School in 1942 and became a separate department in 1945. At the close of World War II, there were 26 field artillery observation battalions. In 1949 there was one FA observation battalion in the active Army, four in the National Guard and the emphasis on target acquisition had once again disappeared. In the Korean Conflict, there were few FA observation battalions and initially the only observation battalion was reorganized into a 105-mm howitzer battalion. By the end of the war there were two battalions in Korea and seven in the United States.

During the Vietnam War, the target acquisition (observation battalions were renamed in 1961) units were generally used piecemeal. Commanders were constantly plagued with the problem of acquiring targets, especially mortar, artillery and rocket firing positions. A variety of target acquisition equipment was used, to include sound ranging, flash ranging, moving target locating radars (AN/TPS-25 and AN/TPS-58), unattended ground sensors, weapons locating radar (AN/MPQ-4A) and the ground surveillance radar (AN/PPS-5). Some units established counterbattery operation centers. In many units, when incoming rounds were received, the procedure was to fire all available artillery at suspect locations, previous

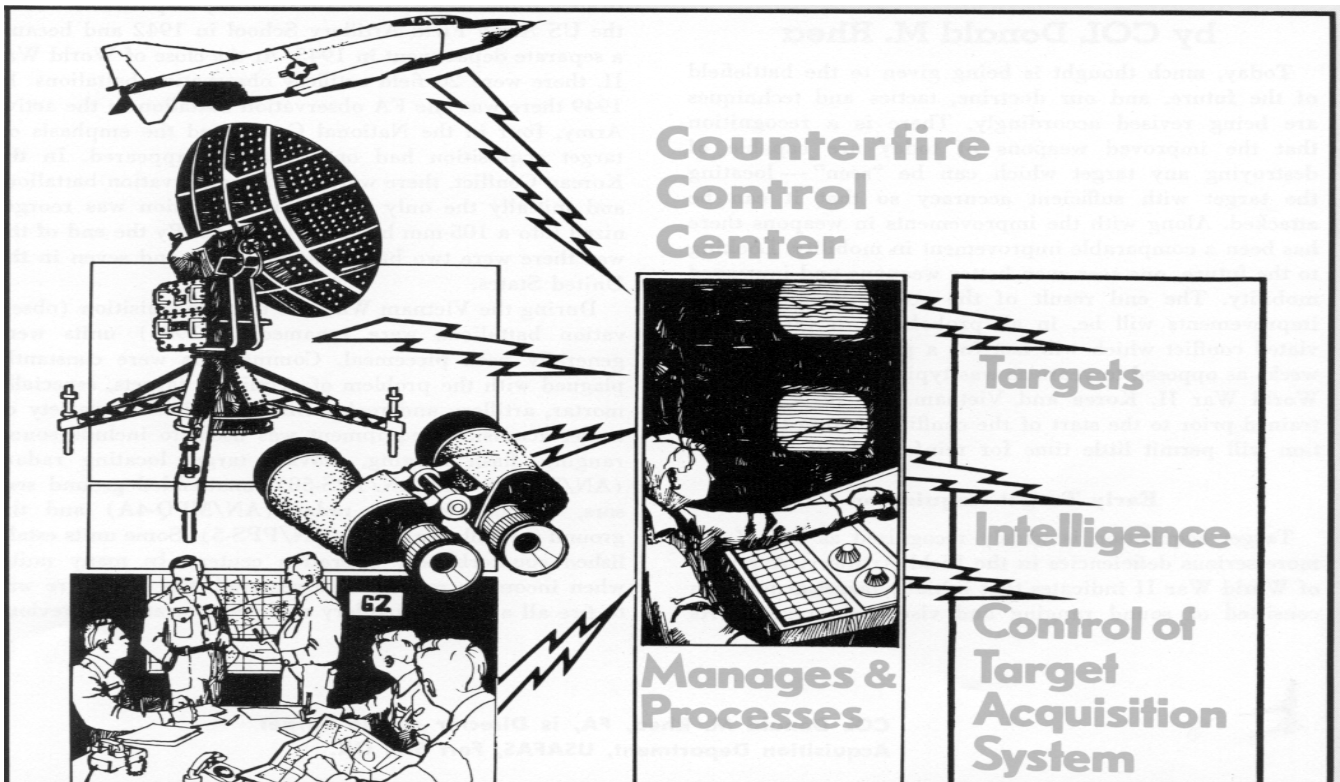
firing sites and locations obtained from shelling reports and a few areas known for enemy activity. As a result, much ammunition was wasted. However, some commanders emphasized the counterbattery mission, trained personnel in the counterbattery procedures and effectively coordinated the paucity of their target acquisition assets. As a consequence, they reduced the effectiveness of the enemy's fire. Looking at today's target acquisition systems, we see again that resources have diminished. There are four target acquisition batteries in Europe. In this country assets include a target acquisition battalion. These batteries and the battalion are currently under the control of the corps artilleries.

Traditionally, the FA Target Acquisition Battalion (FATAB) assigned to corps artillery has been given a general support role with its three letter batteries deployed to provide radar, sound and flash ranging coverage to the committed divisions. Under this system the flow of targets was to corps artillery where they were processed and engaged by the heavy artillery battalions under corps artillery control. The targeting personnel came from the FATAB operations section and the target acquisition battery processing section to work under the supervision of the corps artillery S2. This S2 also was responsible for gathering all other targeting data from the division artilleries, corps G2 and other intelligence sources.

Because of the vastly expanded frontages visualized

for the corps and divisions on the modern battlefield, the control and employment of target acquisition assets and the processing of target data have become further complicated. Considering the number of targets, the volume of information produced over these frontages and the distance-related command and control problems, it no longer appears feasible to centralize counterbattery activities at corps artillery. The bulk of counterbattery activities could be assumed by the division artillery. The division artillery's capability to cope with the counterbattery threat is severely limited by the lack of personnel to collect and process targeting data and to provide coordination and control to the target acquisition systems. The division artillery target acquisition systems are not oriented on the counterbattery targets, as are the FATAB systems, but mostly provide a capability against maneuver element targets. These systems include the moving target locating radar and aerial observers of headquarters battery at division artillery and observers and weapons locating radars of the direct support (DS) battalions. Besides the limitation of its target acquisition systems, the division artillery's command, control and communications network for processing targets is not only cumbersome but also has other serious deficiencies. Integration of a corps target acquisition battery into the division artillery sector further complicates the command, control and communications problems. The interface between

**Target production from all source intelligence.**





the artillery system, the maneuver commander and all outside sources of intelligence — such as Army Security Agency (ASA), air reconnaissance and G2 resources — has grown indistinct and fuzzy.

### **A Positive Approach**

At this juncture it is proper to address the positive approach of what we can do. Numerous efforts are being made to improve our target acquisition capabilities. Division artillery and corps artillery commanders are experimenting with reorganizing their present equipment, personnel and communications to obtain maximum effectiveness and responsiveness from their resources and to open new and better links with maneuver and intelligence forces.

Target acquisition is being exercised against our own artillery and maneuver elements to reveal their vulnerabilities and to sharpen the skills and responses of the targeting systems against real targets. These exercises, together with the studies of our schools and research agencies, the development of training circulars with new doctrine and new target acquisition organizations are representative of the ongoing efforts. Major advances are being made in application of modern technology and the development of new equipment for the artillery and the military intelligence community. This includes laser range finders and designators, mortar and artillery locating radars, moving target locating radars, drone aircraft and remotely piloted vehicles (RPVs), remote sensors, electronic location systems and aerial imagery using TV, infrared, radar and photography.

Too often the improvements of a military capability first take the form of developing and purchasing new equipment — then the doctrine, organizations and missions evolve to fit the equipment. Today's effort to improve target acquisition includes a new look at the doctrine, procedures, organization and equipment. In essence, a "whole cloth" new target acquisition system for FA is evolving. Uppermost among other considerations for development of this system is the threat, based essentially on Soviet equipment and doctrine. A new target acquisition system must locate targets accurately and be immediately responsive to the maneuver commander's desires for suppression and destruction of targets at all levels. Suppression of many indirect and direct fire weapons can be accomplished quickly by the artillery only if the element that locates the target makes the data available immediately to the fire direction center (FDC) and if prior target data are properly analyzed and in useable form. Responsiveness must be the key to any new target acquisition system and to have responsiveness there must be a target acquisition system at all levels of FA — DS battalion, division artillery and corps artillery. The key word is

"system." The system includes a large number of information-gathering sources.

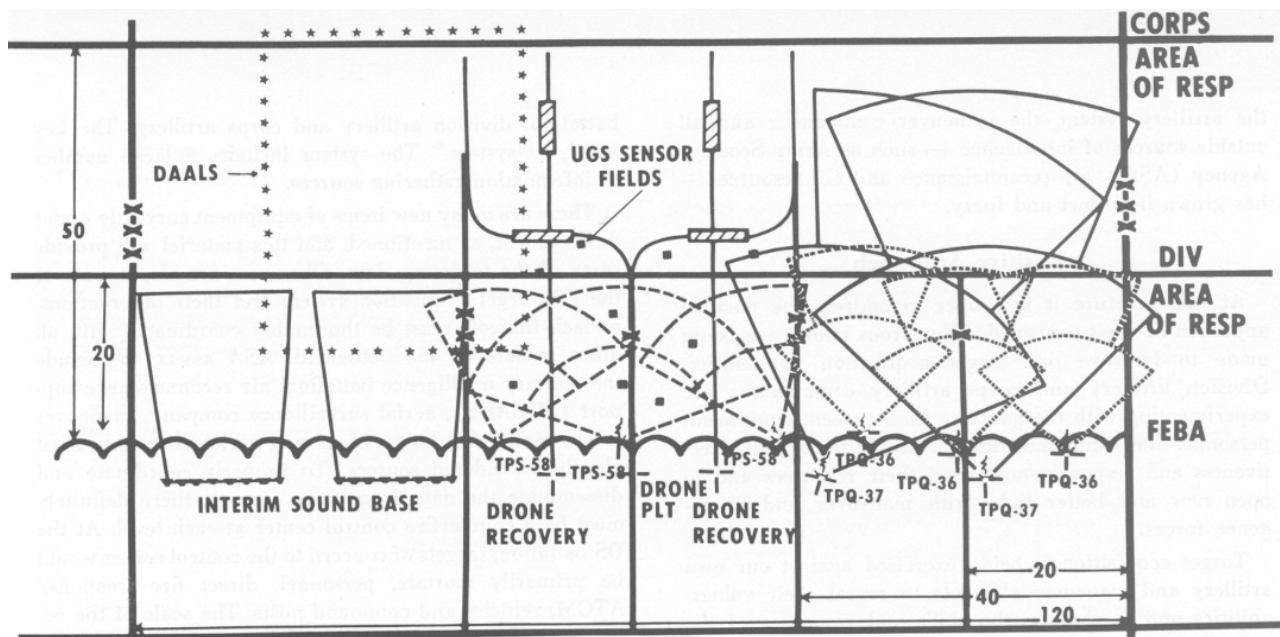
There are many new items of equipment currently under development, as mentioned, and this materiel will provide some of the targeting data. Observers are also a part of the FA target acquisition system and their observations, or lack thereof, must be thoroughly coordinated with all other sensors on the battlefield. ASA assets, to include the military intelligence battalion, air reconnaissance support (MIBARS), aerial surveillance company, maneuver forces assets, Air Force assets and aerial observers, must also be considered sources. To properly coordinate and disseminate the data from these sources, there definitely must be a counterfire control center at each level. At the DS battalion, targets of concern to the control center would be primarily mortars, personnel, direct fire weapons/ATGM, vehicles and command posts. The scale of the activities of the DS battalion counterfire control center would be much less than that at division artillery. The maneuver fire support at the DS battalion will take priority. At division artillery, targets of interest would be largely artillery, heavy mortars, vehicles, personnel, command posts, resupply points, choke points and air defense sites. At corps artillery, targets of primary interest would be supporting artillery and missiles, command posts and supply dumps and deep air defense sites.

### **A New System**

The DS battalion would have a target acquisition capability to include a lightweight, portable moving target locating radar; a lightweight, mobile mortar locating radar; and forward observers equipped with laser range finder/designator and thermal imagery devices.

The division artillery would have a target acquisition battery to employ artillery locating radars, moving target locating radars, sound and flash ranging, aerial observers and a drone or RVP. A "heavy" target acquisition battery would be found at corps artillery to provide deep target acquisition and a limited supplement to a division with long-range drone or RVP, sensors and radar systems.

The control and management of these resources at each level would be through the counterfire control center. A computer would be available in each counterfire control center with sufficient storage and analysis capacity to receive and analyze all the data from the resources suggested plus all other sources of intelligence. A computer to process these data would be absolutely essential for proper management of the target acquisition system. The maneuver commander would then have more options as to how, when and if his artillery would be used to attack these targets.



**Schematic of target acquisition devices.**

Counterfire control centers would be located adjacent to the corps fire support element (FSE) and division artillery tactical FDC, and there would also be smaller counterfire control centers at the DS battalion FDC. These centers will manage all the available target acquisition assets in their zone of action in addition to coordinating and analyzing target data. Communication networks between the counterfire control center, target acquisition devices and the fire support officers (FSOs) and FSEs would be established. Computers would be utilized to analyze data received at corps and division level, and the DS battalion would have an input-output terminal into this target analysis system. Control of all target acquisition devices at the division level and the integration of all sources of intelligence would be performed by the counterfire control center.

To summarize, the new target acquisition system would have the following characteristics:

- Corps artillery would have the responsibility for acquiring and suppressing long-range artillery, missiles and deep air defense sites and assisting division artilleries in their counterfire role.
- Division artillery would have the counterfire mission and be responsible for acquiring targets such as artillery, mortars, vehicles and personnel.
- The DS battalion would have a counterfire capability which would be primarily directed against mortars.
- One or more heavy target acquisition batteries would be organic to corps artillery.
- A target acquisition battery would be organic to each division.

### **Hypothetical Situations**

To dramatize what the effect of such a system would

be, let us take a hypothetical situation with a division in a defensive situation with three brigades on line and the right flank brigade astride the most likely enemy avenue of approach. Target acquisition resources include the target acquisition battery consisting of moving target locating radars which are covering the high-speed avenues of approach, artillery locating radars which completely cover all enemy cannon and most tactical rockets, and the DS battalions' mortar locating radars cover the zone of enemy mortars. The sound ranging base has been emplaced to cover artillery sites which could support the enemy's anticipated attack. Each sound observation post has an additional visual capability and is equipped with a laser range finder and thermal imaging devices capable of seeing through fog and smoke. There is also available an RPV which can range throughout the division area of interest and well into the corps area of interest, providing a TV display and/or photography.

While in this defensive position, the division counterfire control center has carefully studied its order of battle data received from the battlefield intelligence coordination center; has carefully utilized all sources of intelligence, locating enemy command nets, command posts and several of the artillery units; and has these targets stored in its computer. After holding this defensive position for several days, the left brigade begins receiving intensive artillery and mortar fire at twilight. Three commanders of on-line companies request "immediate" suppressive fire. The DS battalion and its reinforcing battalion continue the suppression of the enemies' mortars and direct fire weapons while the FSO, with the brigade commander's approval, immediately requests additional counterfire support from division artillery. Target acquisition devices are cued,

with the target data produced being transmitted to the division artillery counterfire control center where it is collated instantaneously by computer with previously stored targeting information. The end product is confirmed suppression targets.

After assessment of the situation, the division FSE concluded that the attack was not of sufficient priority to warrant additional divisional artillery assets; therefore, the targets (mortars, artillery) were left to the DS battalion and its reinforcing battalion for immediate suppression. Shortly thereafter, the right brigade has an activation of remote sensors placed on a high-speed avenue of approach approximately 10 km forward of the FEBA. Return from these sensors indicates armored columns are approaching along that avenue. This information is immediately fed from the G2 to the counterfire control center which promptly orients and activates the moving target locating radar which had been turned off to protect it from the enemy electronic warfare threat. The moving target locating radar reports that it is tracking the column and has an instantaneous readout of coordinates. The commander decides that he does not yet want to take this column under fire.

Subsequently, another armored column moved into the center brigade area and was spotted by a friendly patrol. The S2 at brigade notified the FSO who immediately notifies the counterfire control center. The moving target locating radar in that brigade area obtains a predicted location for this column. Simultaneous with this sighting, intense bombardment with both artillery and mortars commences in the center and right brigade sectors. An RPV is launched by the division counterfire control center at the request of the division commander to determine the location of the air defense sites which could protect the element that has been sighted along the high-speed avenue of approach. Instantaneous readout from the RPV identifies these sites. Numerous requests for suppressive counterfire are received from companies in the right and center brigades. Analysis by the G2/G3 element at division, in coordination with the FSE, determines that the main attack is in fact approaching the right brigade sector and that brigade should have immediate priority of the target acquisition system.


Artillery locating and mortar locating radar scans are oriented to cover the firing positions of the enemy mortars and artillery, producing a steady stream of target locations. The FSE directs for the commander that all available general support and general support reinforcing artillery be utilized first in the counterfire role and then for attacks on the advancing columns. Continuous locations of the moving columns are passed through FSOs to the maneuver elements and into intelligence channels. Air strikes are called in to engage

the moving columns as the air defense sites are suppressed by artillery. The attack is stopped.

Another example of how the target acquisition resources would be utilized is exemplified by a mechanized infantry company in the attack. Using the bounding overwatch technique, the first platoon is overwatching the movement of the second, while the third is uncommitted. The second platoon, moving between concealed and hull defilade positions, has been sighted by an enemy observer and is brought under intensive attack by enemy artillery, mortars and direct fire weapons. The company commander, from a vantage point, recognizes the situation and requests through his FO "immediate" suppressive fires. This request is monitored by the FSO who recognizes the immediacy of the situation and passes the request, with the brigade commander's concurrence, to the counterfire control center of the division. At this point, the counterfire control center will cue target acquisition devices and the data produced is again automatically collated with target data stored in the computer. The target intelligence is converted into firing data and transmitted to the appropriate firing units. Meanwhile, the forward observer suppresses the enemy direct fire weapons, using the assets of his own DS battalion in conjunction with the direct fire weapons of the maneuver force. The enemy artillery and mortar fires are suppressed and the attack continues.

Compared to the target acquisition system of today, this type of system almost sounds like something from the far-out future; however, as you probably recognize, some of the equipment mentioned in the system of tomorrow is not from a dream world but under various stages of development. The computer, for example, could be TACFIRE with some modifications. Also, many of the techniques and doctrine mentioned are readily useable and implementable today, e.g., use of ASA assets, all source intelligence, counterfire role at division and a target acquisition battery at division.

What has been proposed as a system for target acquisition tomorrow is certainly subject to careful scrutiny. A new target acquisition system is currently evolving at Fort Sill and your participation is welcome and invited. In these days of personnel shortages and money constraints, any new system is automatically disadvantaged. The new target acquisition system will require people, new doctrine, money, a thorough and complete education of the entire Army and continuous command emphasis at all levels.

The price is high; however, if it is not paid, the price of a future conflict on the modern, mobile battlefield will be even higher. A good kill capability is simply not enough. The army which has the best means to "see," as well as "kill," its targets will win. 



# *The 1973 Neareast War*



by

**Colonel Horst Toepfer Army  
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This is the final article in a series of three on the 1973 Neareast (Mideast) War by Colonel Horst Toepfer of the German Army General Staff. The articles originally appeared in the FRG military publication *Truppenpraxis*. Translation of the series was provided by LTC Jon Porter, Officer Student Battalion Commander, FA School Brigade, USAFAS, and LTC Gerhard Dobbert, German Army liaison officer to USAFAS. — Ed

In Parts I and II operational strategic problems as well as closely associated questions primarily were considered. Up to this point in time there have been only a few lessons drawn publicly from these areas. However, some of the other problems were actively discussed even during the conflict and shortly thereafter. These latter problems concerned the newest weapons which were employed in combat for the first time anywhere and [were related] primarily to the antitank and anti-aircraft defenses and their effects on modern warfare.

In this part it will be attempted, without knowledge of the strictly protected secrets of these weapons and their effects, to draw the first lessons merely from the results of their tactical employment and their effectiveness which has been partially confirmed. In addition, weapons replacement and the arms race will be considered with the political necessities.

## **New Weapons — Success of Surprise**

Along with the known modern weapons which really were not employed during the Six Day War —

such as the Soviet SAM-2 and 3 anti-aircraft rockets as well as the T62 tank and the Mig 23 fighter on the Arab side and the US Phantom aircraft on the Israeli side — the following latest Soviet weapons were employed by the Egyptian and Syrian armed forces at the beginning of the Arab offensive:

- *Air defense Rockets:*

SAM-6: Completely mobile launchers with medium surface-to-air rockets to defend against low flying combat aircraft.

SAM-7: Surface-to-air rocket, with an infrared seeker, which can be employed by a soldier in the same manner as a (hand-held) rocket launcher.

- *Antitank Rockets* (employed from various armored and unarmored vehicles):

PUR-61 ("Snapper") wire guided.

PUR-62 ("Swatter") radio guided.

PUR-64 ("Sagger") wire guided.

The successes of the Arabs' surprise [attack] and the related heavy Israeli losses in tanks and combat aircraft in the first three days of the war can be attributed primarily to these new weapons. Whether this is really the case must be at least partially doubtful based on the information presented in Part I and II. However, one thing is certain, the initial Arab success was in any case strongly influenced by these weapons. It appears important to note that these systems were used in mass by the Arabs and required early replacements through air lift by the Soviet Union. . . .

The Arabs employed the new anti-aircraft and antitank weapons on both fronts. The terrain along the Sinai/Suez Canal front possesses the following characteristics in reference to these weapons:

On both sides of the Suez Canal the terrain is desert, flat with sand dunes which develop partially into shifting higher and steeper dunes. The canal lies in this terrain like an indentation with steep, sandy banks. The salt water allows only very insignificant growth [vegetation]. Only directly west along the fresh water canal and the irrigation area on both sides of Ismaelia to the Nile delta do cultivated fields, planted trees and shrubs exist. In the East on the Sinai Peninsula and toward the South, west of the Red Sea, the land rises in several steps from 50 meters to 200-350 meters and further (on Sinai the highest point is 2,602 meters) in which the desert character is maintained. . . .

Observation on both sides of the canal is limited only by the horizon, aside from the reflection of the sun's rays and blowing sand and dust. . . .

With this excellent visibility, the employment of anti-aircraft and antitank weapons is not limited by

nature and they can be employed to their maximum range.

The terrain of the Golan Heights has a different character. From the Jordan valley (altitude between zero and 100 meters) the terrain rises westward over the first stages from 300 meters to a rugged high plateau between 400 meters in the South to around 1,000 meters in the middle and reaching 2,759 meters on Mount Hermon. The mountains are strongly indented, only a few roads are improved and mechanized troops can use only a few path-like routes between these roads.

Although the heights have scanty vegetation . . . the employment of antitank weapons is considerably limited by the ruggedness of the terrain. However, there is the advantage that the few usable roads canalize a mechanized opponent.

During the following considerations these terrain descriptions should be kept in mind and compared with the terrain in the European [theater].

### **Tactics and Technique of Weapons Employment**

The reports of the media show universally the employment of modern weapons systems in "masses." From 1970 until the beginning of the war, for example, 120 SAM-2 and 3 batteries with four launching ramps each were brought into position west of the Suez Canal. With the length of the Suez Canal being 160 km, including the narrow part of the Red Sea, there were theoretically three launching ramps available per kilometer. If one accepts an echelonment of 20 km in depth and an effective range of 50 km, 19,200 square kilometers would be covered by these batteries.

### **Hand-held Soviet SAM-7 carried by the Arabs.**





**A destroyed bunker complex.**

An Israeli officer reported in his description of the Egyptian surprise attack across the Suez Canal, "Almost every infantryman who stormed across the canal had a rocket weapon on his back." Thus also is revealed the massing of hand fired rocket weapons systems carried by the ground troops. This included SAM-7 as well as antitank weapons.

Further it became known that a large number of SAM-6 air defense rockets, completely cross-country mobile, were positioned near all the crossing sites. This made it possible for an air defense umbrella to be advanced over the attacking troops.

While the modern SAM-2 and 3 air defense rockets formed a relatively solid air defense umbrella over the rearward attack sectors another umbrella formed by SAM-6 batteries was pushed forward with the attack. This was, in turn, reinforced or partially replaced by the SAM-7s to be fired by foot troops. Beyond that, SAM-7s, mounted on armored personnel carriers (8 or 12), could be fired in clusters of four or in full salvos. For this purpose the armored personnel carriers were crudely equipped with target acquisition radars.

The techniques of selected massed employment of these modern weapons on the Suez front was to keep the airspace free of Israeli air attacks and, with antitank weapons, to destroy immediately every Israeli tank counterattack or later tank attacks. The technique also provided flank security for their own tank formations.

Tactically the SAM-6s and 7s were employed so that all Egyptian attack movements could be protected from the attacking enemy air force. Thereby it was accepted that the Egyptian Air Force could not or could only partially be committed because of the infrared guidance of the SAM-7 rockets, and the impossibility of clearly distinguishing friendly and enemy aircraft. (Comment from General Steinhoff, former Israeli Chief of Staff of the Air Force: "The infantry shoots at everything.")

At the beginning of the attack the antitank weapons

were committed next to water throwers [to break up sand fortifications] against fixed Israeli positions and later against all enemy vehicles. The antitank defense operated against directly attacking tanks and provided flank security. Various press sources maintain that the SAM-7 was also used as an antitank weapon.

The tactics and techniques used on the Suez front apply also to the Golan front although the nature of the terrain influenced the tactical deployment. However, the "massed employment" was also preferred here as the Soviet aerial resupply which started after four days of war confirms. Perhaps because of the difficult terrain even more hand-held rockets were fired by the Syrians than on the Suez front.

It has been statistically proven in the previous wars that of all the shots fired only an infinitesimal portion hits the target. (In the First World War for each soldier hit one million infantry bullets were fired.) On the other side, however, it is also confirmable that the more accurate weapon finds its target with greater success.

The materiel losses on both fronts, known thus far, amounted to:

- Approximately 900 Israeli tanks lost, 550 in the first four days of the war.
- Over 2,000 Arab tanks were lost, approximately 950 in the first four days of combat,
- The Israelis lost around 110 combat aircraft, 80 in the first three days.
- The Arabs lost over 450 combat aircraft, around 180 in the first four days. . . .

It can be concluded from these facts that the massed employment of air defense rockets came as a complete surprise to the Israelis. After they adjusted their tactics to make the defense umbrella less effective, they countered the rockets' technology with known evasive tactics. By [jamming] the target and acquisition radars (initially by dropping tinfoil strips as in the Second World War), their losses remained relatively low.

In tank losses the situation was different. The initial losses were high because the momentum of the enemy attack had to be slowed by "ad hoc," determined tank counterattacks. As the war progressed, additional losses had to be accepted in order to create the conditions for later counterattacks. However, the losses of the Arabs, more than double those of the Israelis, prove that fighting tank against tank, in addition to using the antitank weapons, is still a successful tactic.

Referring to the air forces the loss ratio is 1:4

(Israeli to Arab), which is practically a success for the Israeli Air Force.

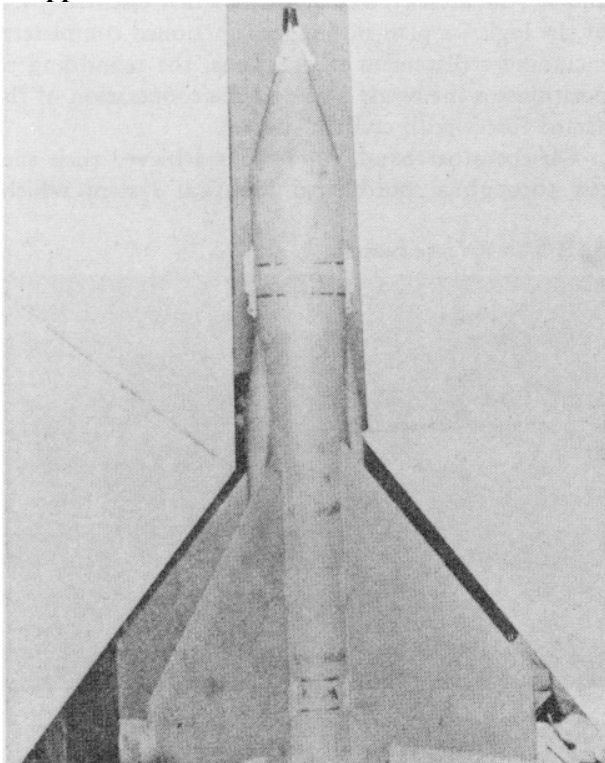
The SAM-7 accounted for only a very limited number of the kills attributed to SAM rockets (probably not more than three kills). The SAM-7 apparently has too slow a speed and because of that the jets can evade it or simply fly away from it.

The results and hit probabilities of the antitank weapons are harder to judge. Here the influence of other battle elements plays a role. If the tanks attacked alone, better hit ratios were probably achieved by the Arab rocket crews than when the tanks were protected by accompanying infantry or when the Arab defense positions were fired on by Israeli artillery or mortars. The same was true if Israeli combat aircraft suppressed the enemy. Therefore, it can be established that tank units, as is known, can operate with particular success as mixed units with mechanized infantry, artillery and air defense units.

To put down the tank as an obsolete weapon system, as was suggested right after the end of the Neareast War, appears to be not only doubtful but false.

The history of the tank as protection for infantry and a vehicle to accompany the artillery in a stationary war, such as the First World War, to an independent, swift, operating-in-packs, combat vehicle of the Second World War continues. Tactics and employment will simply have to be adapted according to the operational situation and terrain conditions.

#### **Snapper antitank rocket.**



The same applies to combat aircraft. As an object steered by man's will they are, now as ever, necessary and irreplaceable. However, here it is also necessary to employ advancing technology to improve offensively and defensively.

This war is often labeled as the first completely electronic war. This statement is true. Since, however, electronics were used this time by both sides, no advantage is to be found. It has merely been proven that new electronically armed offensive weapons systems compellingly demand corresponding electronic defensive systems. It is the same with electronic warfare as it has always been. Each advantage is evened out in time. It is a real advantage only as long as a weapon in its effectiveness does not become known or recognized early. With the appearance of the machine gun, closed attack formations were replaced by open formations; accurate and more effective artillery brought about the "emptiness of the battlefield;" the submarine led to sonar as a means for destroying submarines; and there are hundreds of such examples in the history of wars and weapons.

What stands out in this war is no longer the type of new weapons but rather their manner of employment and their associated tactics and operational control. From the descriptions so far it can be established:

- A mobile air defense umbrella over attacking forces demands from the defender the last commitment on land and in the air and forces him to accept losses if he wants to or has to defend successfully.

He can only counter this procedure if:

- He is protected by air defense rockets.
- He manages through very flexible fighting to lure the attacking enemy out from under his air defense umbrella or to eliminate it so his own air force controls [air] space for successful close air support or interception of ground forces.

If he is successful in that, then he may allow the enemy no time for regrouping and renewed footing. On the contrary, only ruthless pursuit promises success and what is decisive is minimizing one's own losses in men and materiel.

All this points out the importance of the art of fighting so that the initiative will be torn from the enemy as early as possible.

- Antitank rockets, along with other antitank weapons (cannons, mines, etc.) including those employable from the air, are excellent tools for the attack and particularly for the defense. Their massed employment can bring great success, as demonstrated, if surprise is achieved.

However, the rockets' limitations are also apparent:

- The requirement for human manning even

with practically fully automatic target seeking systems such as infrared.

— Every direct or indirect effect of the infantry, artillery, mortars and aircraft adversely influences the soldiers manning the antitank rockets and reduces the accuracy of the rockets.

—The terrain conditions affect observation for employing rockets and use of available concealment for the swiftly moving target.

— Conditions of limited visibility and the effects of temperature on guidance systems also limit the capability.

— The rocket mechanism is susceptible to technical and crew error, maintenance mistakes and damages before being fired.

Therefore, it can be determined that the presence of even the best antitank rockets does not eliminate the tank as the army's principle mobile weapon.

• Tactics as the art of leadership and the associated employment of all weapons on land as well as in the air are subject to constant change. They [the tactics] usually force the defender to react to an attacker's action; while an attacker, by changing tactics, can control, evade, slow down or block the reaction. However, the attacker as well as the defender in a mobile battle will always attempt, through surprising and changing actions, to bring the enemy finally to confused and false reactions.

To do that, however, it is always necessary that the command and control on the ground and in the air be coordinated. This requirement is met through the employment of combined arms, not only of the land forces alone, but also together with air forces and in some cases naval forces.

The sky and the land form the battle arena. The battlefield, an expression referring only to the ground, has long been obsolete.

*Lessons:*

a) To draw premature conclusions from the Neareast War without exact analysis and to derive decisions from them can lead to incorrecable mistakes particularly in military areas but also on the political stage as well and [this] can be fatal, especially if the difference in the factors between the Neareast and Europe are not heeded.

b) Every theater of war has its characteristics and demands a special evaluation of apparent successes and failures.

c) The employment of new weapons requires new tactics; technology influences success in only limited fashion.

d) Neither tanks nor manned aircraft are obsolete;

however, defensive weapons certainly do influence their employment and require countermeasure weapons or changes of tactics.

e) The comparison of materiel losses which has been possible until now proves nothing to the contrary; it does show, however, that armed forces which suffer a surprise attack can tear the initiative from the enemy only with great losses and, in addition, [they] need time to consolidate in order to cope with new types of weapons, i.e., develop new tactics and techniques.

f) Electronics simply improve one's chances [for success]; man's will and leadership skill remain finally decisive.

g) The long known requirement to fight on land with combined arms and a common command for the army, air force and navy which was used successfully in the Second World War, is confirmed by this war to be applicable for the attacker as well as the defender.

h) One conclusion is viewed to be the success of employing all weapons systems in one theater of operations under common command and control, that is, fighting with combined weapons systems on land, in the air and at sea.

### **Logistics — Weapons Replacement and Supply**

This war has once again underscored the importance of logistics and it has done it decisively. The Arabs' surprise attack would not have been possible without initially coordinated, well-planned logistics and it [the attack] was defeated when essential parts of the logistics plan no longer functioned completely, including replacement of weapons, the rebuilding of positions in the battle area and the cooperation of the armed forces with civilian sources.

On the other hand, the Israelis achieved their success through a coordinated logistical system which,

#### **SAM-6 air defense rockets.**





in the course of the mobilization of all means available to the country, continued to improve. Aside from a constantly good supply [system] for replacing weapons from their own industry without depending completely on foreign weapons deliveries, their successful logistics system included well-planned, swiftly executed maintenance as well as salvaging of war materiel—their own as well as captured equipment—which could be repaired or equipped and in a very short time be delivered to the front line units.

The Israelis have shown a very good talent for organization, without which a logistics system cannot effectively support the necessary military operations.

The bravery of the troops coupled with the artful operational leadership of the staffs is based decisively on the flexible logistical support furnished by all means available to the country and its people.

Weapons replacement, the most decisive factor especially in critical strategic phases of the war, did not rely solely on resupply from foreign sources. As the materiel losses reached their peak from the fourth to the eighth day of the war, the Soviets delivered [starting on the third day of the war] to the Arab countries almost 1,000 tons of electronic equipment and the most modern rockets on a daily basis. However, part of this materiel could not be committed [to combat] right away because of the lack of specialists as a result of the casualties and the time required to prepare the items for action.

The American deliveries to Israel started later [in the war] and had an immediate effect because there were sufficient specialists on the Israeli side who could prepare the weapons for immediate employment as well as serve as the weapons crews.

Along with that, it was crucial that the ratio of personnel to equipment was 2:1 for the Israelis from the beginning and sometimes even greater (for example, pilots, including completely trained reserve pilots/crews, two per aircraft at any given time). The Arabs only had a ratio of 1:1. In this way, in spite of the initial high losses in specialists, the Israelis could man new equipment, especially aircraft, immediately while the Arabs needed at least a short time for training. According to press reports, on the Israeli side the time from delivery of an aircraft through its assembly for action until it was used on the front was less than two days, while on the Arab side it took more than four days.

*Lessons:*

- a) Well-planned, flexible and coordinated logistics form the basis for all successful operations.
- b) In modern wars—also in mobile wars—the losses

in men and materiel are very high and surpass even those of the known battles of attrition in the [world] wars.

c) Immediate replacement of weapons as much as possible independent of resupply [from another country] insures success and its exploitation.

d) Well-planned and rapid repair of all weapons—even enemy weapons—right on the battlefield supplements resupply and ensures the highest combat readiness.

e) What is crucial is the availability of specialists, particularly for the sophisticated weapons systems, in order to be able to provide new crews in spite of the heavy losses in men.

f) Money invested during peace saves bloodshed in war and ensures success.

## **The Superpowers**

For more than a hundred years the armament level of all nations in the world has been constantly increasing. The security requirements of individual countries to counter the suspected aggressive desires of other countries lead to an escalation of the armament race. Even efforts at peace and détente have little effect on this situation. As long as a country is highly armed and indicates in its ideologies and its associated politics that it has aspirations for expansion, the neighboring countries must take up the arms race for their own safety.

The Franco-German War 1870-71 brought forth thoughts of revenge and led to an arms race which only appeared to end with the end of World War I. The Peace of Versailles and the Russian October Revolution resulted in a renewed arms race among Germany, Russia and the Western Allies in spite of the Geneva Disarmament Conference.

When Germany was finally eliminated from the race after World War II, the Soviet Union and the USA continued almost without pause. By this time the race included atomic weapons. Again there were disarmament conferences which were to limit the armament race. But in spite of this the race continued. Yes, there were wars with high losses—the Korean War, the Vietnam War and finally the Neareast wars. Until now, the system of détente and disarmament has worked only in limited fashion. The armament stalemate of the superpowers, as well as domestic political difficulties, problems within the power blocs and the danger of new blocs forming through the strengthening of the yellow and black world, prevents large wars and limits the so-called little wars.

In the eastern Mediterranean where the interests of

NATO and the eastern bloc meet, the USA and USSR took the roles as protectors of the Israelis and Arabs. However, these people make it very difficult for their protectors. The Arabs pursue a policy which is very difficult for West and East to understand and which the Israelis believe they must defend themselves against.

Therefore, the USA and the Soviet Union were forced to adopt a policy of support which neither really wanted. Shortly after the beginning of the 1973 Yom Kippur War they had to intercede to limit this war by delivering weapons in order to prevent the victory of one of the parties to the war. Such a victory would have made a balanced armistice impossible. With much diplomatic skill this policy finally succeeded.

However, the delivery of war materiel was then a political-diplomatic necessity which could only be accomplished through the establishment of a generous aerial resupply. In Germany these are called "air bridges." The routes of these air bridges prove interesting. They not only ran closely parallel for long distances in the Mediterranean area but actually touched at their required interim landing sites [refueling stops] in neutral Yugoslavia.

This illustrates the problem with air bridges. The long distances to be traveled require bases for intermediate stops for the large air transports. In a world war these airfields and the long air routes would be vulnerable to enemy attack.

However, as the course of the Neareast War has shown, every interruption of the aerial supply for the attacker or defender is a disadvantage. On the other hand, air bridges, if the major powers are in agreement, make it possible to limit small wars relatively swiftly. They provide them an indispensable tool for crisis management.

*Lessons:*

- a) In spite of all the efforts toward détente, an arms race will always be necessary or, viewed another way, détente will be possible only between equally armed countries.
- b) Wars can be limited, if such is within the common interest of the superpowers or if these powers find themselves in a stalemate situation and must therefore avoid a large war.
- c) Air bridges form an important political-diplomatic tool for crisis management.
- d) The problems associated with air bridges are demonstrated in a large war by the vulnerability of the long air routes and the concentration of the air routes in the battle zones.

### **Value of Good Bargaining Positions—Military Armaments as a Means for Détente**

This war and its direct political results have demonstrated the advantages and disadvantages of *Faustpfander* [translated as good bargaining positions, bargaining from strength].

When the armistice came after the 1967 Six Day War, the Israelis had three strong bargaining positions vis-a-vis the Arabs:

- Against Syria, the major part of the Golan Heights;
- Against Jordan, the Jordan plains; and
- Against Egypt, the entire Sinai peninsula with the Gaza Strip.

The Yom Kippur War with the Arab surprise attack has demonstrated the value of these conquered areas as military buffer zones for a successful defense of Israel's heartland.

However, these strong bargaining positions also had a strong negative side. Through them and the Palestinian claims stemming from [the existence of these conditions] it came to considerable rearmament of the Arab states, to an enhancement of their fighting spirit and finally to the Arab surprise attack with the branding of Israel as aggressors.

It should not be examined here which political and diplomatic advantages are associated or not associated with these strong bargaining positions. However, it can be established that in the current war they were militarily an advantage.

However, the last war has brought additional good bargaining positions for the Israelis:

- The complete occupation of the Golan Heights with a part of the plain toward Damascus; and
- The bridgehead over more than a quarter of the length of the Suez Canal.

On these two fronts one can almost speak of doubled bargaining positions for the Israelis. Whether, however, such good bargaining positions have an equal value in larger wars must be doubted. Large areas used for bargaining purposes, such as Germany held in World War II, can overextend the defense and thereby suddenly change a military advantage to a disadvantage and lead to a collapse militarily and politically.

Similar, however politically different, are the problems associated with military armament. This war also demonstrated this. If Israel had disarmed considerably, it would not necessarily have come to a détente in the Neareast because the Arabs then surely

would not have so vigorously rearmed, but would have nevertheless attempted to achieve their goal of winning back their captured territories which were being used to bargain against them. This shows, of course, that only with matching military strength is a policy of détente possible.

However, as emphasized several times in this series of articles, a certain balance of power must be maintained. If this is not the case, if military over-balance or vacuums are formed, then the incentive to attack is present for the stronger party. For that reason, then in negotiations with the goal détente, the policy must be to strive for a military balance of power whereby, as with strategy, the factors of trade, industry, currency, etc., must also be considered. Unilateral actions can impede this strive for balance.

Just as the balance of power is decisive for the worldwide policy of détente pursued by the superpowers with their partners; the same necessity exists in other areas of the world.

*Lessons:*

- a) The value of strong bargaining positions must be considered realistically; the size and type [of areas used for bargaining] must be in realistic proportion to the military power relationship and must support national policy.
- b) The value of these areas can change and ultimately become a danger and strengthen the opposing side.
- c) In a large war the seizure or possession of areas to be used for bargaining should be measured with other standards; they can provide positive results but usually produce negative results.
- d) In the same manner as strong bargaining positions, military armament can lead to détente but only if a certain measure of balance is maintained.
- e) In this way military arms or strength are a political factor which must be used to achieve détente.

### **Summary**

The preceding discussions and the lessons drawn show that this Neareast War has actually brought nothing fundamentally new from the military standpoint. Ostensibly the new [things] discerned are only logical results of lessons from the history of earlier wars. These lessons permit the rapidly advancing technology and the change in the different societies to be predicted and they are merely confirmed here.

Additionally, premature conclusions drawn from the events in the Neareast were partially transferred from geographic areas whose terrain formations, climatic conditions and native mentality as well as social forms are quite different. This is partially a repetition of the mistakes and fallacies which came into use during and

after the Korean and Vietnam wars but had to be discarded later.

Because of the employment of the most modern new weapons on both sides, this war has certain similarities with the 1936 Spanish Civil War in which the effects of new weapons were also tested and which brought tactical, even military-strategic, perceptions which, among other things, determined the German success at the beginning of World War II.

One can look at the Yom Kippur War as confirmation of various acknowledged or presumed perceptions such as:

—Adequate armed forces and appropriate measures by the government guarantee security and the defense; this can also contribute toward détente if a balance of strength with the neighbor [country] is guaranteed.

—Superior military intelligence, political evaluation of its results without biased thinking and without regard to the statements of a potential enemy guard against surprise.

—Planning for total mobilization and its timely implementation is a political tool of crisis management.

—A modern war is a battle in all dimensions requiring a common leadership in order to be able to employ successfully all military weapons rationally and directed toward the desired goal.

This war also permits important conclusions:

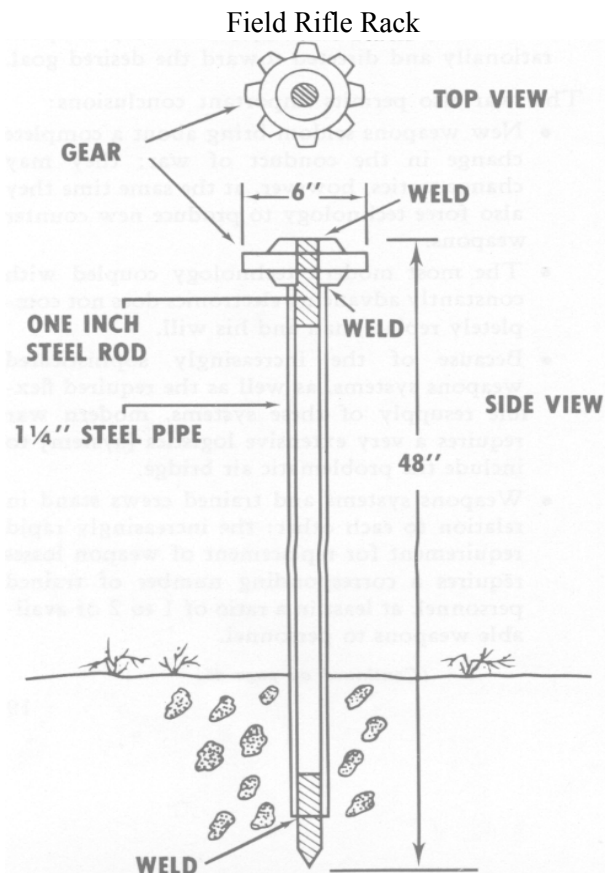
- New weapons seldom bring about a complete change in the conduct of war; they may change tactics, however, at the same time they also force technology to produce new counter weapons.
- The most modern technology coupled with constantly advancing electronics does not completely replace man and his will.
- Because of the increasingly sophisticated weapons systems, as well as the required flexible resupply of these systems, modern war requires a very extensive logistics [system] to include the problematic air bridge.
- Weapons systems and trained crews stand in relation to each other; the increasingly rapid requirement for replacement of weapon losses requires a corresponding number of trained personnel, at least in a ratio of 1 to 2 of available weapons to personnel.

*(Continued on page 45)*

## Field Rifle Rack Can Solve Problem

OGDEN, UTAH—Tired of looking for a place to lean your rifle where it won't get stepped on, driven over, lost, dirty or wet? SSG Randy Chatelain, gun section chief in Battery B, 6th Battalion, 83d FA, was and he did something about it. Staff Sergeant Chatelain has designed a field rifle rack which is inexpensive to construct and virtually indestructible.

The rack is mobile and can be secured quickly. It is adjustable in height, accommodating any rifle, can be covered easily by a poncho or tarp to protect the weapons from dust or rain and provides a centralized site for rifles.



Other pluses listed by the sergeant include: immediate inventory of weapons and easy adaptability to nearly all field Army units as well as FDC, mess, supply, commo or maintenance sections. The top gear can hold 11 rifles and may be numbered.

## The Cherished Tale Of The Tank And The Ox

CENTRAL GERMANY—Since the M60A1 tank is now being replaced by the M60A2 and the M551 reconnaissance vehicle, this story can now be related with humor substituted for the initial embarrassment it caused. The enthusiasm and publicity that accompanied the M60A1 tank from the drawing board to its initial employment in USAREUR is well known to veteran tankers. However, what happened when this tank first crossed the LD on its first major maneuver in Europe is another story—a story that has been cherished by those few tankers who were tuned in on a certain radio net or were privy to the most frustrating "incident" a first lieutenant can suffer during his first months of command time.

Suddenly over the net came the word:

"Fearless Six, this is Hot Trot Six . . . Phaseline Bravo is your Line of Departure-Go! . . . and exploit! . . . I say again, EXPLOIT!"

Before Fearless Six could acknowledge, the net was hopelessly jammed with both Blue and Red Forces.

"They're in!"

"The Big Horses are loose!"

The radio nets went miraculously quiet a few moments after the electrifying news passed. All nets were tuned in on the "Fearless" channel, listening to the voice of 1Lt FLASH, commander of the M60A1 assault. The rest of the story can only be told in the radio transmissions of the next few memorable moments:

"Hot Trot Six . . . this is Fearless Six. I have crossed the LD at 0900."

"This is Hot Trot Six. Roger. Where are you?"

"This is Fearless Six. I'm in the lead tank."

## Right by Piece

"This is Hot Trot Six. Excellent. Disregard phaselines. Exploit-exploit . . . have a big day!"

A pause followed. The pause stretched to a wait. Somewhere a CVC mike opened . . . paused . . . then closed. The switch opened again.

"This is Fearless Six. I'm stopped."

"This is Hot Trot Six. Say again after 'I am.'"

"This is Fearless Six, I say again—stopped! Stopped!"

"To hell with radio procedure—what do you mean stopped?"

"I said stopped! Damn it—stopped!"

"Where?"

"About half a K from the LD."

"Stopped by what?"

Pause—getting longer.

"Get that? What stopped you?"

Another pause, then, "An ox!"

"Did you say 'ox?'"

"Affirmative—an OX!"

"You mean an ox?"

"An—A—it's still a damn ox and if I ever . . ."

"Wait! Please! In slow, simple words: what's going on?"

"It's simple. I just crossed the LD on this narrow farm road and there comes this German farmer with his cart and ox."

"Well, tell him to move!"

"He won't!"

"Why not? Well, what's he doing?"

"Just sitting there hollering, 'Nein, Nein!'"

"Reason with him. Get somebody to talk to him. You're holding up the assault."

"I'm not holding it up! My troopers have unhitched the ox, and they're trying to push him over with their shoulders, but this is the biggest damn ox. I'm going to fire a blank round over his head!"

"No! Stop! You will NOT fire a round, y'hear? Acknowledge!"

Pause. Dead silence (except for an airmobile flight leader complaining he's running out of fuel waiting to rendezvous over the objective).

"Fearless Six! Acknowledge that you will not fire a round at the ox!"

"This is Fearless Six—(sigh) I will not fire a round at any ox."

"Or over an ox."

"Or over an ox."

"How are you doing? What's going on? The ox still there?"

"(Sigh) The ox is still here."

"Well . . . well, what about him? What's he doing?"

The dead pause again.

"Fearless Six—Paul! Where is the ox now?"

"Right in front of my tank."

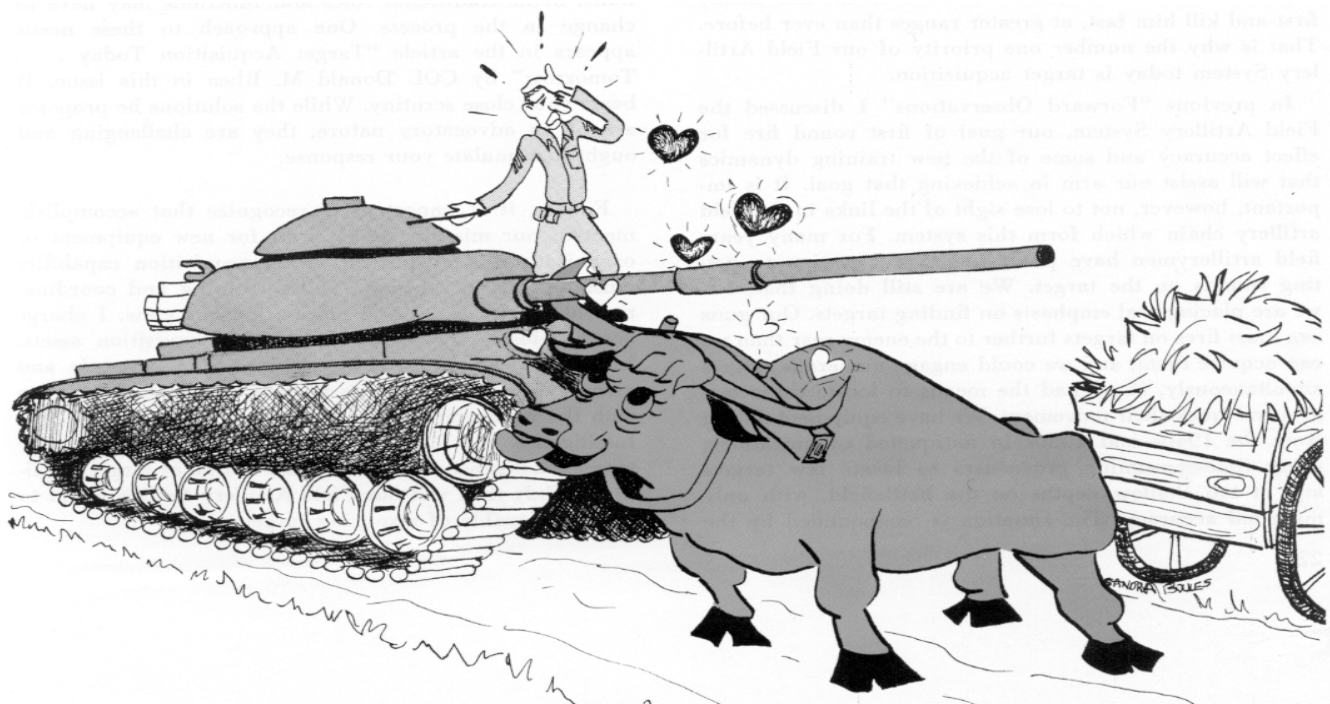
"What's he doing?"

Sound of a CVC mike switch opening-closing.

"Paul—what-is-the-ox-doing?"

One more pause, then:

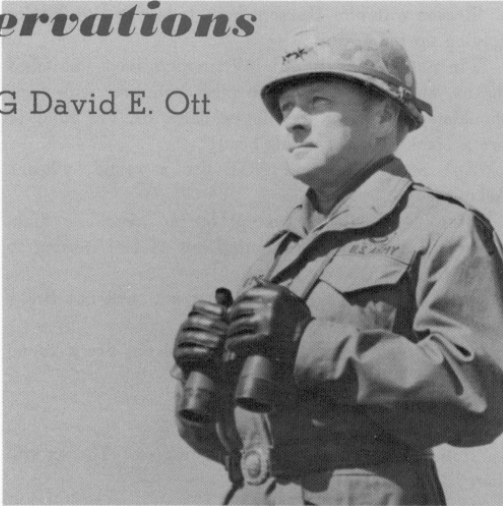
"He's . . . he's . . . Oh, hell—He's licking the front of my tank!"





## ***forward observations***

MG David E. Ott



When our weapons have been located by the enemy, we are rendered ineffective. "If he sees us, he'll kill us." This is a fact of life on the modern battlefield and it is being observed with increasing regularity. It provides the field artilleryman an accurate half-picture of the next war we are likely to fight. I say "half-picture" because the principle can work for us as well as against us. If we can see the enemy, we can kill him, too. This makes it very important to see him first! Since the Civil War, unfortunately, our guns have outranged our ability to locate targets for them, and if we are to win that first battle of the next war, we will have to see the enemy first and kill him fast, at greater ranges than ever before. That is why the number one priority of our Field Artillery System today is target acquisition.

In previous "Forward Observations" I discussed the Field Artillery System, our goal of first round fire for effect accuracy and some of the new training dynamics that will assist our arm in achieving that goal. It is important, however, not to lose sight of the links in the field artillery chain which form this system. For many years field artillerymen have paid particular attention to getting rounds on the target. We are still doing that, but we are placing real emphasis on finding targets. Our guns can mass fires on targets further to the enemy rear than we can acquire them, and we could engage numerous targets simultaneously, if we had the means to locate those targets and track their movement. We have equipment dating from the 1940s and 1950s in antiquated organizations, using time-consuming procedures to locate few targets and at too shallow depths on the battlefield, with only marginal accuracy. The situation is compounded by the hostile environment observation aircraft face today. To a large extent the divarty commander has lost his "eyes."

This must change. We are working with a host of new target acquisition equipment developments which promise to help make that change in the near future. By the "near future" we mean the late 1970s and early 1980s. A new countermortar radar, the AN/TPQ-36, is lighter, smaller, more accurate and vastly superior in range and automation to the AN/MPQ-4A in use today. The AN/TPQ-37 Artillery Locating Radar will provide similar improvement over our obsolete AN/MPQ-10. To locate moving ground targets, the French-German AN/TPS-58 (RATAC) is already replacing the AN/TPS-25A on a test basis until we begin producing our own and should be in the inventory soon. New tactical capabilities provided through the Analytical Photogrammetric Positioning System (APPS) and a remotely piloted vehicle (RPV) promise greater accuracy, timeliness and flexibility than ever before in our use of aerial photography. An improved sound ranging system is being developed and the potential of remote sensors opens up many avenues for the acquisition of targets. Finally, laser range-finding devices for our observers can greatly reduce adjustment and increase accuracy in observed fire.

Equipment is only a part of the picture, however. New organizations, more responsive to the battlefield needs of maneuver units, must be created at division artillery and in the direct support battalions to fully exploit increased equipment capability. More coordination of intelligence relating to targeting must be made in these new organizations. Some traditional roles and functions may have to change in the process. One approach to these needs appears in the article "Target Acquisition Today . . . Tomorrow" by COL Donald M. Rhea in this issue. It bears your close scrutiny. While the solutions he proposes are of an advocacy nature, they are challenging and ought to stimulate your response.

Finally, it is important to recognize that accomplishment of our mission cannot wait for new equipment or organizations. Our present target acquisition capability must be tailored, through better training and coordination at unit level, to find targets for our guns. I charge you to closely scrutinize your target acquisition assets. Insure responsibilities are fixed, train your people and give them meaningful roles in field exercises. Coordinate with the maneuver units you support, the ASA, Military Intelligence and Army Aviation units to add to your target intelligence capability. Take charge of target acquisition. Only then will our Field Artillery System begin to be truly capable of acquiring targets.

The Journal Interviews . . .

## COL. WILLIAM L. HAUSER

*Former Chief, Enlisted Personnel Management System Task Force, MILPERCEN*

***"We are motivating the individual to do what the Army wants him to do by appealing to his desire for material success."***



Colonel Hauser was born in Washington, DC, in 1932 and was graduated from West Point in 1954. He has served with field artillery units in Europe, Korea and Vietnam. A graduate of the Command and General Staff College and the Army War College, the colonel holds an MA in history from the University of Southern California. While attending the Army War College, he was a Research Associate engaged in independent study with the Johns Hopkins University's Washington Center for Foreign Policy Research. He is a frequent contributor to *Army Magazine* and *Military Review* and is perhaps best known as author of the book "America's Army in Crisis." Colonel Hauser recently completed two years as Chief of the Enlisted Personnel Management System Task Force, US Army Military Personnel Center; and has now assumed command of the 3d Infantry Division Artillery (MECH).

*Journal: In designing a training program to assist in the implementation of the Enlisted Personnel Management System (EPMS), we're concerned particularly on how EPMS will operate at the battery commander level. What do you see as changes in the battery commander's role, in his responsibility for individual training as a result of EPMS?*

Hauser: First, EPMS is a misnomer. We chose the title because everybody understood what the acronym, OPMS, meant. So, we chose EPMS. But, in fact, EPMS, like OPMS for that matter, is not a personnel management system. It is a professional development system. It is designed to tell the individual career soldier—not the first term—his commander, the personnel manager and the trainer, what a given soldier (at one stage of his career) can do to prepare himself to perform competently at the next professional level. At the beginning we had to define the professional levels. Now obviously

the professional levels would differ from one career field to another, but we chose one standard ladder for the whole Army, much the same that we have done for years and taken for granted with the officer corps. It does not matter whether you are talking about infantry officers or quartermaster officers, you pretty well understand the professional level when you say a lieutenant, a captain or a major; in broader categories, company grade officers, field grade officers, general officers.

A skill level is defined as those skills which the man needs to perform in his particular MOS at that particular career level. Skill Level 1 is defined as those skills or that level of skill which a soldier ought to have in grades E3 and E4. Skill level 2 is defined as that body of skills and knowledge which a man ought to have to perform competently at grade E5. Skill Level 3 is that body of skills and knowledge which a man ought to be able to demonstrate to perform competently at grade E6 in his MOS. Now the whole key to EPMS is that we want to motivate the soldiers of the Army to professionalize themselves. How do you motivate people? The major motivation for all of us is the desire for material success: the desire for status, prestige, money—whatever the prerequisites of status and so forth. First of all, you've got to accept that as the basic motivation of most of us human beings. And then you have to say, "Well, yes, but what does the Army want?" The Army wants the soldier, at whatever level of his career, to be proficient at performing his duties, performing his skills. If what motivates the individual is promotion and the goal of the Army is for the soldier to reach skill at his particular job, then the key to understanding EPMS is that we are tying together the motivation of the individual and the goals of the Army. We are motivating the individual to do what the Army wants him to do by appealing to his desire for material success.

*Journal: Would you address EPMS from the perspective of the personnel manager at the DA level and the commander at the unit level?*

Hauser: Like everybody else, my behavior changes when my role changes. When I become a commander, I am going to start thinking about the goals of my unit, less than I will about the goals of my individual soldiers. Therefore, EPMS also has to motivate the commander to achieve the Army's goals. Now this involves a lot of things. First of all, the soldier is not the property of the commander. The soldier and his skills are the property of the Army. This is kind of a personnel manager's viewpoint, if you will, but we happen to have an Army in which people go from unit to unit to unit, from overseas to stateside, etc. Therefore, the soldier has heretofore been treated, we feel, much too much as a commodity

***"EPMS is not an exercise in social justice to improve the treatment of our enlisted men. It is an exercise in efficient management of human resources."***



and not as an individual to be professionally developed. We officers always think about developing our junior officers. We all like to play "Mr. Chips" and develop our junior editions of ourselves. We do not tend to think of our NCOs in the same way. We need to motivate the commander to think of his NCOs sort of like he thinks of his officers: he's professionally developing them. The commander always understands that when an officer goes off to professional development schooling, that the officer normally is lost to the unit. This selection for professional schooling is run by the Department of the Army and the officer is very much the property of the Army, and the Army gives and the Army takes away. Whereas, regarding enlisted TDY schooling, the unit commander says, "The enlisted man belongs to me and if I give up the soldier's services for a period of time, I ought to get that soldier back."

In the first place, the Army cannot afford to send every enlisted man to TDY school. We've determined that the Army can probably afford to send maybe half

of its career enlisted soldiers to Basic NCOES and maybe half the people in the zone to Advanced NCOES. Therefore, in the typical career soldier's career, he will probably go to one or the other, but not both. Some soldiers might go to both and some soldiers might go to neither, but the typical soldier would go to one or the other in the course of his career. And typically, he will take a senior course by correspondence. These things are going to take years to develop, of course. Therefore, there must be some surrogate for the NCOES course by which we hold the soldier to a certain standard before we let him go up to the next level. We are trying to repeal the "Peter Principle," if you will. We're trying to say that the soldier, the fire team leader, must demonstrate that he is qualified to be a squad leader before we promote him to E6. The squad leader must demonstrate that he is competent to perform as a platoon sergeant before we promote him to E7. As I said earlier, that's the essential principle of EPMS. So what we really are talking about is a system whereby we want the soldier to be trained or to train himself with assistance or some combination of all these things. We want the man to prepare himself first, then we want to have some system by which we may measure his level of competence. That is an evaluation system. And if the evaluation system says that he is ready to move up to the next level, then the man is eligible for promotion and may compete in the normal promotion system.

Now how does this affect the senior noncommissioned officer and the troop level officer in the care of his soldiers? The ARMY, in big capital letters, isn't going to take care of those soldiers. The soldier or his commander on the ground is going to have to do it. The Army will provide for a limited number, it will provide formal schools for some and it will provide extension and correspondence courses for others. But basically, the responsibility will lie with the soldier and with his troop level commander. And I would venture to say that the most important single device in EPMS is going to be the skill qualification test which, if the soldier takes it and gets what we call a higher passing score, will be a certification of his readiness for promotion when combined with a certain amount of experience, either on-the-job or through schooling. We have to design this evaluation system so that if the evaluation system says that the soldier is truly qualified and the device we use to signify this of course is the award of a higher skill level, that in fact that will be the truth. We will say here is a staff sergeant E6 and he has earned a Skill Level 4 and we must be able to say that Skill Level 4 signifies the man's readiness to move up to platoon sergeant level and we want it to be a valid indicator.

*Journal: Will the skill qualification test be a*

*combination of a written test and a performance test?*

Hauser: The test is not to be, must not be, the old MOS test with a new title. If it becomes that, then we have failed. What it must be is some combination of hands-on performance testing and written testing. Some people may say, "I'm sorry, at this level or with these skills there is no bloody way in the real world that we can examine by performance testing. We've got to make it written however sorry written tests are to test certain motor skills as opposed to verbal skills." You people in the Field Artillery School must design a skill qualification test which will validly measure whether or not this commodity, a Skill Level 2 has now achieved the knowledge and skills which are normally thought to be required by a person with a Skill Level of 3.

*Journal: Some of these MOSs are very broad. For you to say that this test will encompass the full scope of all the duties is a little hard to believe.*

Hauser: I'm going to rephrase your question: you're asking why are we consolidating MOSs. Some believe that MOSs are too broad now, right? And yet we are consolidating MOSs, we are going to reduce the number of MOSs in the Army from where they are now, about 480, down to say 350 or so, okay? Now we have discovered that the system is not good enough to distribute 480 MOSs to long-tour areas, short-tour areas and CONUS in five different skill levels. With 480 different MOSs, additional skill identifiers as well as compassionate reassignments and family problems and all the rest, there are frankly too many permutations and combinations and the system is unmanageable. Now, right now we have in the Army what we call a 10 percent mismatch rate. That is, 10 percent of the enlisted men in the Army are serving in spaces which do not call for skills which are possessed by the man in the space. But that is a broad interpretation if you consider primary MOS, secondary MOS and additional MOSs held by the individual, or MOSs substitutable in our regulations that are held by the individual. That's a 10 percent mismatch rate even if we optimize our own judgment of ourselves. If you mismatch primary MOSs versus the MOS the job calls for, the mismatch rate is like 20 percent—it is doubled.

*Journal: Only 20 percent?*

Hauser: Why do you say, "Only 20 percent?" It reminds me a little of this colonel to whom I was talking about a year and a half ago. I said, "This 20 percent mismatch rate of man and job in the Army is unconscionable." And he said to me, "Well, Colonel Hauser, you really ought to look on the positive side of things instead of

the negative. After all, 20 percent mismatch really means that 80 percent of the men in the Army are matched to their jobs. And 80 percent is pretty good." And I said, "No, 20 percent is unconscionable."

Now, to correct this 20 percent mismatch rate we are doing some very unfair things to the commander in terms of equity—a word I have come to despise because it cloaks a multitude of sins. In a sense, we are going to get at the commander through his soldiers. We are going to make the commander do what he should. Now that sounds terribly unfair but we're going to get at him through his soldiers. For instance, here's an E4, Skill Level 1 recon specialist, the RTO in an FO party. We say, "This man will never be allowed promotion to E5 until he can make a higher passing score on the 13E20 test." This means he has got to qualify, he must be brought up to these standards before he is eligible for promotion. What we are trying to do is teach the Army a harsh lesson: the unit commander of the Army has got to get off this habit we've had all these years that, "I am the unit commander. I am responsible for the training of my unit, but somehow I am not responsible for the training of my men as individuals."

*Journal: Is this feasible in light of personnel shortages and other constraints facing today's commanders?*

Hauser: We are, in terms of personnel shortage or turbulence or what have you, trying in EPMS to institutionalize unit schools, if you will. The successful unit commander, in the future, is going to have to train his individual soldiers in their individual skills. This means running unit schools and the Training Extension Course (TEC) program must support those individual skills. We are going to have to have nonresident courses whether they are in the TEC mode or whatever. The schools, the TRADOC schools, must develop nonresident courses which will teach the test, so to speak.

What is wrong with teaching the test if the man, after being taught the test, has acquired the skills? The unit commander, if he wants his men to advance in the Army, is going to have to help them advance. It is placing a terrible burden on the shoulders of the unit commander. It is one which, in my opinion, he should welcome with pleasure; but it is going to be a terribly painful burden until the branch schools gin up the support system which will help him to do it.

*Journal: Let's look at the other side of the coin. We find that units are spending more time painting churches, doing projects downtown and conducting race relations and drug and alcohol abuse seminars than they are in actually training for MOS skills or unit mission type skills. What can we do to reduce the load on the unit commander in those areas to insure he has the time to*

*become a better unit trainer?*

Hauser: When we got the job of developing EPMS and got together with the people in TRADOC, one of the first questions asked was, "What are we going to do about this hostile training environment?" And our answer to that was, "We cannot solve those problems." What we're going to have to do is devise a professional development system which will MAKE unit commanders and their higher headquarters put priorities in the Army where the priorities ought to be. You know, you can't train unless people let you train; therefore, what we said is, "We must establish these standards, we must establish these gates." Before the soldier may go through this gate, he must meet certain prerequisites. We establish the prerequisites and then we put the pressure on the unit commander and say, "You must." It's a very harsh regime that we're imposing upon the unit commanders of the Army and I do not want to pretend otherwise.

*Journal: One of the most frequent questions asked by NCOs in the field is, "If I am not selected to attend the resident NCOES course but have to earn my rank by OJT, why do I lose promotion points?"*

Hauser: TRADOC wants to encourage soldiers to go to the courses and therefore TRADOC tells Department of the Army that they should not only continue giving promotion points for course attendance, but in fact, up those promotion points. In the short run, we want to encourage people to go to the courses. I hope we can phase that out someday. The soldier who goes to the school will be given a marginal advantage, at least in the near future, over the soldier who gets his qualification through on-the-job experience. Why? Because we feel that the schools will be so good that we will know what we have when a guy is called a graduate of a certain course. He will have been to a school which taught him this knowledge. So we say that the man who has been through the school is qualified whereas the man who has gotten the equivalent through on-the-job experience is presumed to be qualified.

*Journal: Would we give additional points for an artilleryman who takes the infantry course or a college course or extension courses in an area other than his MOS?*

Hauser: I do not think any of us are interested in an artilleryman getting points for taking courses in other than his skill into which we are promoting him. When we give him a higher level skill and a higher level MOS and grade, we are signifying that he is qualified at that next higher level in his MOS. Therefore, we do not want to go around giving brownie points for education per se,



but for education in the skill in which he is seeking promotion. That is another reason we have to have nonresident course backup. In fact, there has got to be, in my view, a nonresident course equivalent for every resident course. A command sergeant major told me that I was going to make the whole NCO corps go back to the kitchen table at night. And I said, "Yes, maybe so." However, if they had given me OPMS to work on I would have come up with promotion tests for officers. Skill qualification tests are not going to be impossible standards, that is, depending upon the schools again. They are going to be reasonable standards.

If you will take a reasonably competent section chief 13B and determine what this man needs to know to become a reasonably competent chief of firing battery, then provide the resident and nonresident courses which will enable that guy to acquire the knowledge and skills that will permit him to function with reasonable competency as a chief of firing battery—then you have achieved your purpose.

That is why we have said that, with the exception of the Junior Leader's Course, no soldier will be required to go to school to get selected for promotion. We have said that he can get the equivalent eligibility for promotion through on-the-job experience.

*Journal: Are we changing the enlisted efficiency reports to reflect this?*

Hauser: The enlisted efficiency report is a very blunt tool, just like the officer efficiency report. We all know that. The enlisted efficiency report is currently undergoing a marginal improvement process in which we are going to make one EER for the E1 through E5 and a senior EER for the E6 through E9. It would be similar to having one OER for company grade officers and a different OER for field grade officers. That is not a really major improvement. We think it is a minor improvement that should have been made. The EER will still be a supplement to the skill qualification system. The job really boils down to this: If I am a chief of firing battery and I have under me six section chiefs, I should say, "How many of these section chiefs possess the knowledge and skill to do my job?" And if my answer is, "Two of them do and four of them do not possess that body of knowledge and skills." Then I should say, "What must I do to develop those other four?" Now incidentally, in ginning up EPMS we looked at the British system, the Canadian system and the German Army system plus the Navy and Air Force. The United States Army lags behind all of those. We are trying to create something that's foreign to the United States Army, something we haven't done before. And that is why there is so much that

is unknown in this whole business. Five or 10 years from now we will be able to judge whether or not we have been successful. But the biggest job we have to do is to imbue the officers and NCOs at the troop level with this sense of responsibility for the professional development of their subordinates. Let me get down to the brass tacks. What does the chief of firing battery need to know how to do that the typical chief of section does not know how to do? Name one thing.

*Journal: Lay the battery.*

Hauser: Okay, there is an identifiable skill that a chief of firing battery has to be able to perform properly. And that is something that is going to have to be taught to the section chief. Now the Field Artillery School ought to be writing the skill qualification test to advance a man from Skill Level 3 to Skill Level 4. That should probably be one of the items on the skill qualification test. If we sat down and brainstormed it, we could come up with a list of maybe a dozen identifiable skills. Some of these skills could be tested on a written test pretty well. Some would have to be tested by performance. Now when I say performance test, I mean a go, no-go; not did he do it poorly, well or very well. Then if this E6 can perform adequately or demonstrate through written tests that he will be able to perform these identifiable skills to be a chief of firing battery, then he has passed the skill qualification test for Skill Level 4. Then we

***"The skill qualification test is not to be, must not be, the old MOS test with a new title. If it becomes that, then we have failed."***




allow him to compete for promotion to E7. You see, it is a gate. When he has met those tests, we signify his passage through the gate by awarding him Skill Level 4. We tack it on his MOS. That signals the personnel managers at Headquarters DA that this man has now joined, if you will, the zone of consideration for promotion to E7 by a centralized board. For instance, the last E7 board looked at 40,000 E6s. The next E7 board under EPMS may not look at 40,000 E6s. It may only look at 20,000, those with Skill Level 4.

*Journal: In view of your study of the isolation of the Army in your book, "America's Army in Crisis," where do we separate the "whole man," which is more related to the commander's evaluation of the individual, from the skill qualified individual who is a product of his skill qualification test score?*

Hauser: Yes. First of all, promotion to E5 and E6 in the Army is by the semi-centralized system which evaluates the whole man, does it not? It is not just his EERs; it isn't just his MOS test score. Its a number of other things: his civilian and military education, his EER weighted average and the commander's recommendation which is highly subjective. In other words, the semi-centralized promotion system to E5 and E6 is itself a rather highly codified whole man judgment process. The most centralized promotion system, to E7, E8 and E9, is also a whole man concept.

Now, where in the system do we judge the whole man? And my answer is, in the semi-centralized and centralized promotion systems. The skill qualification test and the prerequisite system of EPMS determines the most important thing about a soldier and that is, can he do his job. It is not the whole man but simply the technical skills of his designated MOS. That is why in EPMS we said that promotion and eligibility will be determined by the EPMS standards, however, promotion will be determined by a judgment of the whole man. We are giving the unit commander one more ball to juggle to the EPMS standards. EPMS is not an exercise in social justice to improve the treatment of our enlisted men. It is an exercise in efficient management of human resources. We are trying to professionalize the career soldier of the NCO corps of the Army.

*Journal: You have been with EPMS for two years now and your organization has captured the imagination of a lot of people. What does the program need now in order to become a success?*

Hauser: EPMS will never be completely successful until every officer and noncommissioned officer in the chain of command over the individual soldier recognizes and accepts his responsibility for the professional development of his subordinates. 

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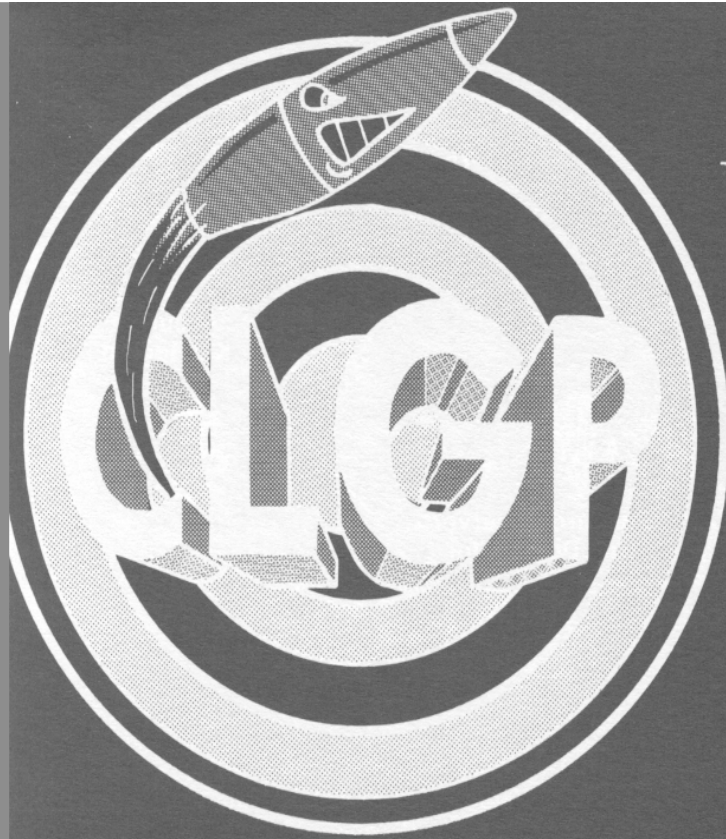
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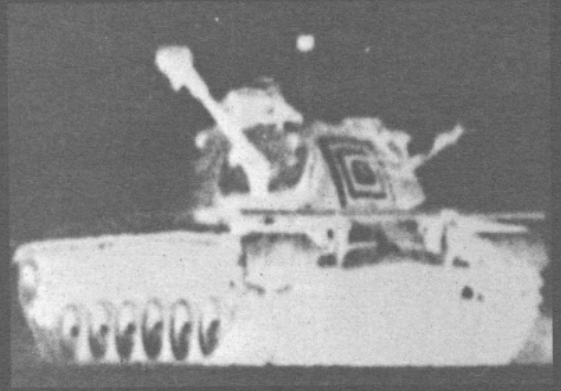
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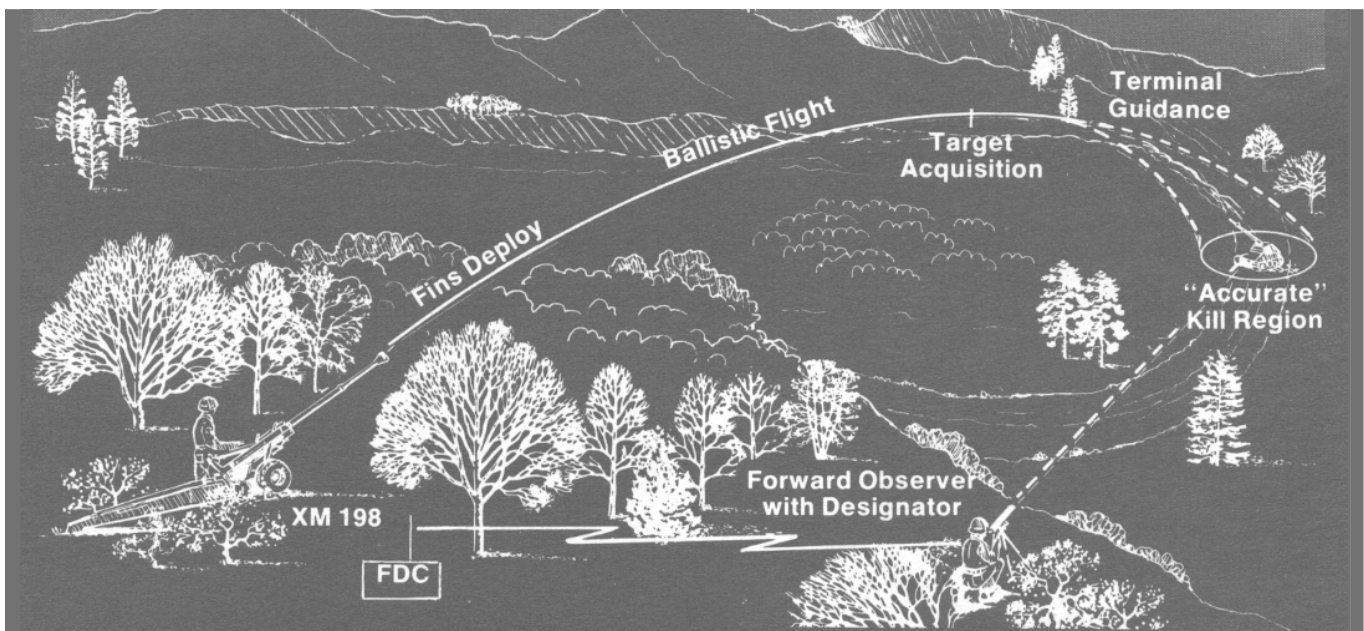
by LTC Charles L. Williams III

On 4 September 1974 at White Sands Missile Range, a 155-mm projectile, fired from a M109A1 howitzer was successfully maneuvered to a direct hit on a tank moving at 10 miles per hour. Since that time two additional stationary targets and a tank moving at 20 mph have been hit. Also, the project manager had scheduled firing of three "smart rounds" with designation provided by a remotely piloted vehicle in late February. This smart round may prove to be the most promising development in artillery materiel since the advent of atomic artillery in the 1950s. The smart round — a maneuverable projectile capable of overcoming target location errors and hitting moving or stationary hard point targets through the use of laser technology — is technically termed the Cannon Launched Guided Projectile (CLGP), pronounced "CLIG-UP."

Here's how the CLGP system works, how it might be integrated into the Field Artillery and its evaluation for possible eventual issue to troop units.

The system consists of a 155-mm laser guided round and a laser designator which is operated by the observer teams of the direct support (DS) 155-mm battalions.

The CLGP round is somewhat heavier and longer than the standard 155 high explosive (HE) fragmentation round. The added weight and length allow for a laser sensitive seeker, guidance and control equipment and a shaped charge warhead to be packaged into the 155-mm projectile. It loses some range by comparison to the standard 155-mm HE round due to increased weight and drag. However, since CLGP responds to reflected laser energy from the Ground Laser Locator Designators (GLLD), this limitation is not critical. The opportunity for first round hits, even on moving targets, more than makes up for range limitations.



Operating sequence for the smart round.

The CLGP round requires laser illumination, termed designation, from the GLLD. This provides energy which the CLGP seeker can detect, acquire and to which it can maneuver. The GLLD — presently in engineering development — is configured to provide range, azimuth and vertical angle information as well as laser designation. When fully developed the GLLD is planned to be man-portable or operable from a vehicle and will be compatible with the Army and Navy CLGP rounds and the laser guided munitions of the Air Force as well. The use of GLLD, even with unguided munitions in the ranging mode, will greatly enhance the FO's effectiveness and versatility. Also, the GLLD will have a night sight which will significantly increase the FO's ability to detect and engage targets in darkness with CLGP or other field artillery munitions.

The 155-mm CLGP round flies ballistically to a point on its downward trajectory where the seeker and guidance and control equipment are enabled. At this point the round can detect and acquire the laser energy reflected from the target and begin maneuvering toward the target. However, the ground surface area in which the seeker can acquire laser energy and the area to which the round can maneuver are not equal due to the seeker field of view which is relatively small and the maneuver capability which is relatively larger. These areas are called "footprints." The area within the field of view of the seeker is the visibility footprint and the area to which the projectile can maneuver is called the maneuverability footprint. It should be recognized that these footprints are dynamic and thus change continuously from enablement to impact. Figure 1

shows what could be expected from a CLGP round fired from 11,700 meters to a ballistic aiming point indicated by a "B" on the diagram (cloud ceiling, 4,000 feet) [see page 32].

The ballistic impact point is where the round would impact if it did not maneuver. The grid is composed of 1,000 meter squares which gives one an appreciation for the potential of CLGP. At enablement the round could maneuver to the limits described by the solid line in the figure. With the 4,000 foot ceiling it could detect reflected designator energy from anywhere in the area described by the dashed lines. The overlapping of these two footprints is what is called the "usable" footprint. This is the area that the FO must concern himself with when calling for CLGP fire on a target. The FO's target must be within this usable footprint area so that the CLGP can both see and maneuver to the target.

Although the footprint is affected by cloud ceiling, preliminary analysis shows the CLGP can still be effectively employed even in low ceilings given the proper muzzle velocity and quadrant elevation. It should be reasonably effective in cloud ceilings which would deny close air support.

The footprint is unaffected by darkness. If the target can be detected by the FO and designated with the laser at night, the seeker can acquire and maneuver the CLGP round to the target. The GLLD does not operate in the visible light spectrum. This provides the capability of engaging targets in total darkness with accurate first round fire and should prove to be particularly demoralizing to any enemy.

The CLGP munition offers tremendous flexibility

to the field artillery. The incredible accuracy which CLGP promises no longer requires that the entire battery be committed to firing on most targets. The guns of a howitzer platoon can fire on separate targets while the rest of the battery could be engaged in an area mission or simply preparing for action.

In effect, the DS observer team becomes a point target engagement channel which can very effectively complement the direct fire point target weapons of the maneuver commander. This then provides the supported brigade nine additional channels of point target killing capability. When one considers the engagement rate that the DS battery and their designators can achieve, these nine channels take on an effectiveness beyond their actual numbers.

Consider the FO of a mechanized infantry company deployed in a defensive position in Europe, the Mideast or anywhere his position could be threatened by a hostile force composed of large numbers of tanks and other armored vehicles. If he were attacked by this highly mobile force today, he would call for HE fragmentation or Dual Purpose — Improved Conventional Munitions (DP-ICM). This effectiveness would be a function of his ability to determine the enemy force speed and direction and to cause rounds to land at predicted intercept points (see "Attack of Armored Targets," July-August 74 *Journal*).

Although his efforts would not "kill" many tanks, his greatest contribution might be to button-up, slow down or canalize the enemy force so as to make him more vulnerable to aerial weapons or the supported company point target systems which could include TOW, DRAGON and tank guns (if the company had cross attached armor).

Now consider what he might do if he could call on the field artillery's CLGP munition and his team was equipped with the GLLD. With the same opposing force of armored vehicles and mobile air

defense weapons, his contribution to the battle would be greatly increased.

He would be positioned so as to have maximum lines of sight on the most probable routes of enemy advance. Given line of sight, he could effectively engage point targets out to great ranges with deadly accuracy. He could selectively engage those moving targets which posed the greatest threat to his supported company. It might be the exposed air defense weapons which are inhibiting effective air support. It could be the armored vehicles to his direct front equipped with long range antitank missiles. It might well be a tank platoon which is approaching a platoon area, made all the more vulnerable due to the loss of a TOW team which was just knocked out by enemy fire.

Although his primary interest would probably be the moving hard point target, his effectiveness against stationary point targets would enable him quickly to destroy or neutralize such targets as pontoon bridges, observation posts or command posts, bunkers, crew served weapon emplacements and many other hard or soft stationary point targets.

Before becoming too euphoric over the capabilities of the CLGP system, consider its present status. The 155-mm CLGP is being developed by two corporations which are engaged in a 12-round shoot off to test different approaches to producing a maneuverable laser guided round. The firings are against stationary targets as well as moving tanks and present varying degrees of difficulty due to target orientation and speed. In the summer of 1975, the Project Manager, Cannon Artillery Weapons, at US Army Armaments Command, will present his recommendations as to further development of CLGP to the DA Staff.

The Field Artillery School is also evaluating CLGP in the form of a Cost and Operational Effectiveness Analysis (COEA). The COEA requires a user evaluation of CLGP, in terms of cost and effectiveness, in comparison to current and developmental hard point target systems.

The COEA begins with an approved threat and scenario. The threat is a projection of enemy capabilities to the time frame when CLGP could be deployed. The scenarios are based upon the Scenario Oriented Recurring Evaluation System which has been developed by TRADOC. The threat and scenarios influence the COEA at every stage of analysis.

Supporting data and professional advice have been received from the Comptrollers Office, many Army Materiel Command (AMC) agencies and the





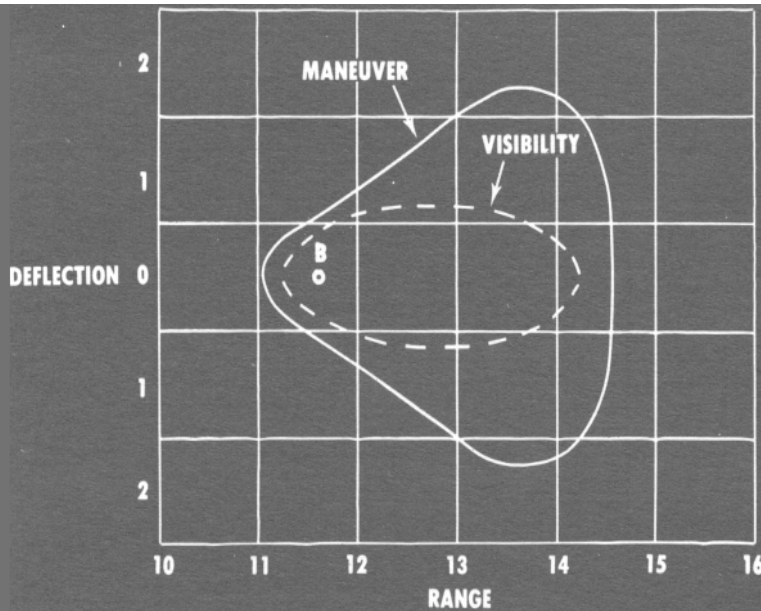


Figure 1—CLGP footprint at 4,000 foot cloud ceiling.

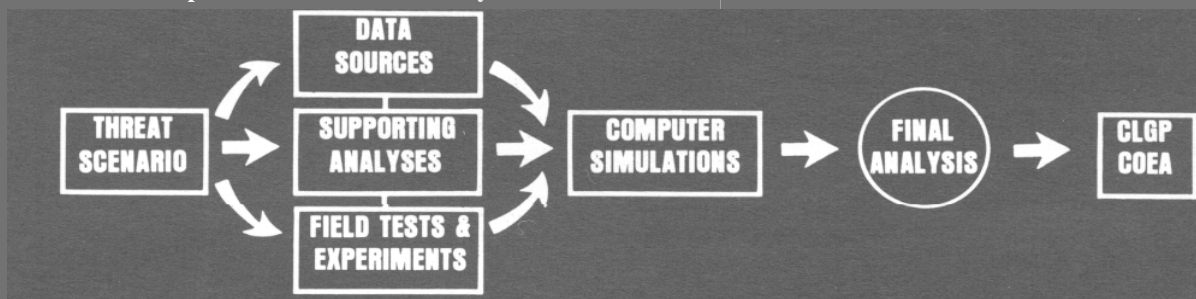
various service schools. It includes costing data, performance data and tactics and techniques for the various other point target weapon systems in the study, providing the background data base for the COEA.

Field tests and experiments are an additional data source which is essential to the CLGP COEA. AMC and TRADOC jointly sponsored the Field Experiment on Designator Survivability (FEDS) recently at Fort Hood, TX. This test provided valuable insights into laser designator survivability as well as the effectiveness of countermeasures and counter-countermeasures.

The second test is the CLGP Developmental/Operational Test I (DT/OT I). The CLGP DT/OT I being conducted by the Operational Test and Evaluation Agency and the project manager, consists of the competitive shoot off as well as an evaluation of the use of the GLLD in CLGP applications.

The third test — the Forward Observer Team Equipped with the GLLD (FOTEGLLD) — was conducted by MASSTER at Fort Hood and addressed the various command and control problems which affect employment of CLGP.

The CLGP cost and operational effectiveness analysis.



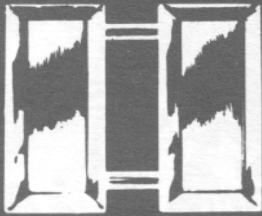
The fourth and final test is a field experiment being conducted by Combat Developments Experimental Command at Fort Ord, CA. This test will investigate countermeasures and counter-countermeasures as they relate to CLGP.

The results of field tests and experiments and data sources provide input for subsequent supporting analyses. Topics of these analyses include CLGP engagement techniques, terrain sensitivity, command and control procedures, countermeasures and counter-countermeasures. Using the results of the supporting analyses as a basis, the effectiveness of CLGP is further evaluated analytically by computer simulations. The results of the simulations are carefully evaluated in light of cost considerations in the final analysis of the study.

The results of the final analysis must provide recommendations to the Army staff which, when paired with evaluations made by the project manager, will be the basis for a decision as to further development of CLGP. The Field Artillery School's CLGP COEA was scheduled to be forwarded to the Department of the Army on 31 March 1975.

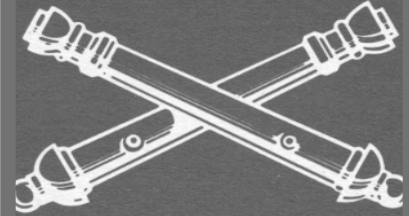
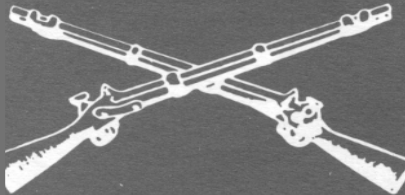
Preliminary analysis of the COEA gives promise of a system that is vastly superior to anything yet developed for the attack of moving or stationary hard point targets by the Field Artillery. If the CLGP hardware performs according to specifications, the Field Artillery will gain undreamed of engagement capabilities. Ultimately, a CLGP capability could greatly increase the combat effectiveness of the DS artillery battalion. This, in turn, will enhance the overall effectiveness of the combined arms team and provide the maneuver commander with great additional combat power to impose his will upon the enemy. ☒

LTC Charles L. Williams, FA, is Chief of the Cannon Launched Guided Projectile Branch, Deputy Assistant Commandant for Combat Development, USAFAS, Fort Sill, OK.



A

# RELATIONSHIP OF RESPECT



by LTC Thomas (Jack) Barham, Infantry

## "Getting Along With Grunts"

Reflecting upon some of the many positive experiences in what is right quickly becoming a medium long career in the Army, it occurs to me that some of the consistently satisfying professional relationships I can recount have been with lieutenants of artillery.

Oh sure, the *very best* lieutenants I have known have been infantry, but then I've known a hell of a lot of infantry lieutenants. My acquaintance with artillery lieutenants, however, has been fairly limited—small enough so that one dummy could have heavily diluted my good opinion of the lot. As I cannot recall a single really negative impression, they all must have been good men.

I knew them, those whose names I can recall and those with names forgotten or never known, in a single professional capacity—as forward observers (FOs) of supporting artillery.

Based upon my observations of these few good men, I now, in comfortable field grade dotage, presume to advise present and future lieutenants of artillery who may be assigned to accompany an infantry unit, in training or combat, as forward observers.

This advice is coordinated with no one, but you probably will find it endorsed by most senior artillerymen. As relatively new officers, fiercely proud of your branch and thoroughly imbued with artillery spirit, you may be

surprised at how consistently lieutenant colonels of artillery and infantry tend to agree with each other about certain things.

Here then, are five articles of advice to the forward observer, which you may wish to lightly entitle, "Getting Along with Grunts."

### 1. Know How to Shoot

Second, lieutenants are supposed to make mistakes, but the time to make them is not when you are working as the only artilleryman with an infantry unit. Most infantrymen like to think of artillery as a big hammer with which they can reach way out and smash the enemy right into the ground. The FO is the handle to that hammer. If one tries to work with a faulty hammer handle, one wastes a lot of strokes, deflects instead of drives and can wind up hitting his own finger.

I never met an artillery FO who couldn't shoot well. Perhaps there are none, but if there are . . . if *you* are not totally confident of your professional capabilities, then avoid an FO assignment at all costs. Find a job in administration or supply, or go AWOL, but *do not* go to an infantry company, especially one destined for combat, and identify yourself as an FO.

Now, assuming that you are a typical, highly competent FO, remember this about shooting for the infantry. Infantry company commanders are not renown for their patience. I have personally been guilty of harassing a good FO to shoot faster than he was capable of accurately and safely shooting. Get fire on your target as rapidly as possible, but do not let an excited (or, perish the thought, panicky) infantry commander bully you into taking dangerous shortcuts. With the great strides being made in fire support you can do the job faster than it has ever been done before. But too-hasty observation procedures can still result in wasted time, misspent ammo and friendly casualties.

One aspect of fast and accurate shooting is your prior knowledge of the tactical plan, including all intended movements of every element of the unit you are supporting. Just knowing the primary directions and objectives is not enough. If there is a rifle squad on flank security, or a part of the battalion recon platoon out in front, you must know where, and why, and how long and everything else about them, just as your FAOBC instructors tell you.

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***"I never met an artillery FO who couldn't shoot well."***

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Should you ever sense that, through carelessness, ignorance or some form of perverted professional bigotry, you have been left uninformed of some aspect of the situation, make as big a pest of yourself as necessary to *get* informed.

Essentially, you should receive at least the same orientation as the company platoon leaders. On rare occasions, through some planning mishap, the FO arrives at the unit after the order has been given and the commander is totally occupied in final preparations for his mission. Under these circumstances, some harried rifle company CO may say something like, "Stay with me and shoot where I tell you." The FO who accepts this is failing in his mission, and especially failing in his responsibility to the leading infantrymen whose lives will depend on good artillery support.

First, make damn sure you arrive at your supported unit in time to become thoroughly oriented on the mission and plans for its execution. In cases where somehow this just doesn't happen, take whatever action is necessary to get the information you need before the operation commences.

If the unit commander can't or won't talk to you, scare up the weapons platoon leader. He should be somewhat less rushed than the commander and, because of his considerations for employing his mortars, should be



the officer second-best qualified to orient you. Naturally, this is sloppy procedure. With proper attention to timing, *you* should be advising *him* on the best use of his mortars.

The experienced and thoughtful infantry company commander will take his FO with him to receive the battalion order. He will include the FO when he gives his own order to the platoon leaders and he will reserve time for special consultations with the FO about fire support for the anticipated mission. I know all this is covered in classes at Fort Sill, but I thought it might boost your confidence a little to have an infantryman confirm that it really does happen. Should you find yourself in a unit where it isn't happening, you must recognize that things are not as they should be and take action to get your relationship with the commander in proper context. The artillery fire support officer at battalion headquarters can usually assist you in this respect.

## **2. Being a "Good" Map Reader Isn't Good Enough**

Future artillery FOs will suffer from having been preceded by several generations of Fort Sill lieutenants who were a lot more than just "good" map readers. The officers I have observed could all give you the coordinates of your latest heelprint in a 12-digit grid. This was true even in areas in Vietnam where a 1:50,000 map was a piece of green paper with grid lines on it. Perhaps it is the training inherent to observation and fire adjustment procedures that produces such really excellent map readers. Whatever the cause, if you are assigned to work with an infantry commander whose experience with artillery FOs is similar to mine, he will take your navigational prowess for granted.

Many company commanders in Vietnam counted on their FO, when he wasn't shooting, to keep them well informed of the precise location of the company. This left the CO free to concentrate on thrashing about trying

to control three or more dispersed rifle platoons and whatever attachments he had, keep his own CO informed of developments and talk to adjacent units, gunships, dustoffs and the myriad of other people and things that demanded his attention during an operation. Sure, those

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*"Infantry company commanders are not renown for their patience."*

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company commanders could read a map and determine their precise location when they had to. But with a good FO along, they rarely had to. They were blessed with an excellent map reader as part of their company command group and they depended upon him.

If the idea of an experienced infantry captain depending upon a green artillery second lieutenant for navigational advice seems incongruent, just remember that he's also depending upon you for a lot more than helping him navigate.

### **3. Make Advance Plans for Emergency Communication**

The coordination you do in your own battalion before you ever leave for an observer assignment can have big payoffs for the infantry. I've never understood why an FO with a "PRC-25" (circa my own days as a company commander) could always talk to a fire direction center (FDC) 12 kilometers away while I, with a jeep-mounted "GRC-47," could not raise my battalion headquarters on the other side of the road.

Somehow, artillery communication always seems to work well. Therefore, should you find yourself in a position where you are the only individual in a unit who can communicate with anybody, don't feel like you've just witnessed a virgin birth. Several circumstances can combine to put the supported unit commander out of touch with his own headquarters. If this occurs, you may be asked to relay a message over your own net.

Before you leave your battalion, be sure the people you'll be talking to know which outfit you'll be supporting and all the appropriate call signs and frequencies. They're supposed to, of course, but *you* should personally check it. There will normally be land line comms between your FDC and the next higher headquarters of the unit you're supporting. Knowing the correct call sign matchups, your FDC can relay an emergency message to the infantry battalion headquarters and let them know that your supported unit is having comms trouble. Before you get too smug, rest assured I have seen the situation

work in reverse order. Even artillery comms is not infallible.

### **4. Play the Game**

This applies primarily to field training exercises. I know, one of the reasons you joined the artillery was to eat your field rations from a folding table covered with a red cloth and to sleep in tents on nice folding cots. But think of it this way: your days as an FO are a relatively short period in your career. Soon you'll be a battery XO or a staff officer and spend the rest of your career basking in all that luxury. While you're up with the grunts, play the infantry game. It will give you some good bar stories and help you appreciate all the comforts of the artillery when you can enjoy them.

An FO who always has to return to his battalion at chow time, who ignores the digging in and camouflage practices of the infantry troops and who loads his jeep with all kinds of comfort paraphernalia not available to his infantry peers is building a psychological barrier between himself and the men he supports. This barrier can definitely affect the degree of cooperation he receives and have a negative influence on his personal performance.

No one is going to mind if you disappear for a time during admin halts in an exercise and sneak a shower or a better meal than C-ration potluck. Since you usually have a vehicle assigned to you, there's nothing wrong with putting a thermos of coffee or an extra blanket under the seat. But take care how you exhibit your potential for easier living. Remember, infantrymen choose their

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*". . . make as big a pest of yourself as necessary to get informed."*

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branch according to their own personal values. They will not appreciate a comparison of branch worth based solely on who stays the cleanest in the field.

### **5. Don't Get Dead if You Can Help It**

If forced to articulate some criticism of the artillery lieutenants I have personally observed, it would be that a few of them were a little careless of their personal safety in combat. One officer of my acquaintance was killed and another seriously wounded, both under circumstances that did not demand the sacrifice of their lives to the mission.

Some new FOs seem to feel that because they are working with men who are often exposed to direct fire,

they need to prove that they are not cowed by exposure to direct fire in order to acquire and maintain the respect of the infantrymen around them. Should you ever start to feel this way, remind yourself (and you can quote me) that infantrymen don't *like* being shot at and most of them avoid it whenever possible.

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***"The officers I have observed could all give you the coordinates of your latest heelprint in a 12-digit grid."***

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Being a machine gun target is a professional hazard that volunteer infantrymen are willing to accept when it is totally unavoidable. Failing to take cover when taking cover is the obvious thing to do is not, in the eyes of most infantrymen, a courageous act. It is indicative of either a greenhorn or a fool, neither of whom should be adjusting artillery fire in combat.

With the impedimenta of fire adjustment (radio, big binoculars, map case, etc.) hanging about him, the FO is identified easily enough as a primary target to the enemy sniper. Don't make his job any easier by standing up when you should be lying down or walking when you should be crawling.

There may be times when exposure to enemy fire is necessary in order to do your job, and when these times occur, you'll be expected to possess sufficient physical courage to accomplish your mission. No commander wants an FO who panics under fire or who grows so numb with fear that he cannot function, but neither does

he want a guy who is likely to get himself blown away in the first burst.

Alive and functioning you are, in many cases, the most effective combat weapon available to the supported commander. Dead, you are useless. Seriously wounded, you are a liability.

You are also extremely hard to replace during an operation. Unless you have an exceptionally talented radio-telephone operator (RTO), your getting hit leaves the unit bereft of trained artillery observers. (The RTO, of course, is also subject to getting killed through the FO's carelessness.)

Sure, lots of infantry guys can adjust fire, but not so well as a professional artilleryman. And when they are calling in fire, their primary jobs get slighted.

This last, and most important piece of advice, then, is:

In combat, be as brave as you have to be to do your job as well as it can be done. Conserve and protect yourself as a vital part of a combat team. *Never* take senseless risks just for the purpose of "proving" yourself.

My days of direct dealings with lieutenant-type FOs are long past now. But who knows, someday I may command something larger than an infantry company and you may be assigned to work with an element of that something in the capacity of a forward observer. Should this ever happen, you'll be treated as a mature, highly trained, extremely competent professional—because that is my lasting impression of artillery lieutenants. ☒

**LTC Thomas J. Barham, INF, is editor of *Infantry* magazine, US Army Infantry School, Fort Benning, GA.**

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## Commanders Update

COL W. A. Samouce  
101st Airborne Division Artillery

LTC Richard M. Bronson  
2d Battalion, 37th Artillery

LTC Edward J. Bunn  
1st Battalion, 75th Artillery

LTC Robert N. Morrison  
2d Battalion, 81st Artillery

LTC Dorrace D. Major  
1st Battalion, 4th Brigade  
Fort Ord, CA

LTC William E. Trent  
2d Battalion, 4th Brigade  
Fort Ord, CA

LTC John S. Stycos  
15th Battalion, 4th Brigade  
Fort Jackson, SC

COL J. L. Gibney Jr.  
11th Marine Regiment  
1st Marine Division

COL R. P. Johnson  
10th Marine Regiment  
2d Marine Division

COL D. B. Barker  
12th Marine Regiment  
3d Marine Division

LTC M. H. Waterbury III  
1st Battalion  
10th Marine Regiment

LTC R. D. Boles  
2d Battalion  
10th Marine Regiment

LTC R. G. Steffey  
3d Battalion  
10th Marine Regiment

MAJ J. A. Haring  
1st Battalion  
11th Marine Regiment

LTC D. E. Obuhanych  
2d Battalion  
11th Marine Regiment

LTC R. O. Merritt  
3d Battalion  
11th Marine Regiment

LTC W. D. Fitts  
1st Battalion  
12th Marine Regiment

MAJ W. G. Smith Jr.  
2d Battalion  
12th Marine Regiment

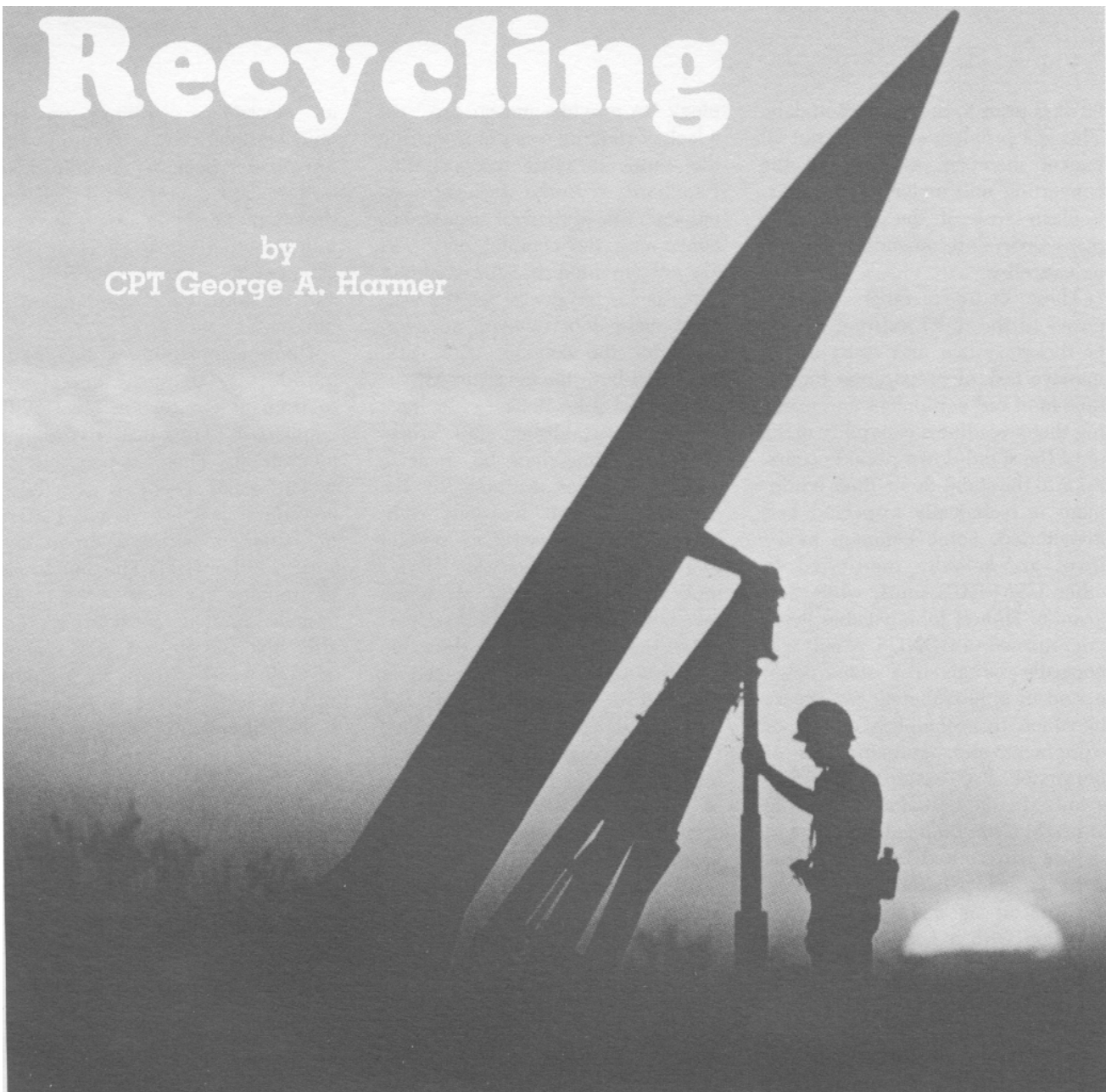
LTC W. C. Frank  
3d Battalion  
12th Marine Regiment

MAJ M. N. Wall  
1st Field Artillery Group  
Force Troops Pacific

COL R. J. Phillips  
2d Field Artillery Group  
Force Troops Atlantic

# Recycling

by  
CPT George A. Harmer



An undertaking affecting Sergeant Missile units and Honest John Rocket units in Europe is that of converting to the new Lance Missile system. Offered here is some enlightenment to fellow field artillerymen undergoing this conversion.

The target date for conversion is established by Department of the Army and the certification of a Lance unit depends upon the successful completion of three major events: an Operational Readiness Test (ORT)—an Annual Training Test

(ATT) after operational capability is proven; an Annual Service Practice (ASP); and a Technical Proficiency Inspection (TPI). The time frame allotted for these events is 90 days, with only the ASP a fixed event as established by White Sands Missile Range, NM, and normally conducted at the end of the 90-day period. The time frame for preparation and the date of inspection is flexible with the other two events and depends upon training progress, corps artillery scheduling conflicts, availability of the USAREUR or DA TPI teams and

the battalion commander's preference.

Prior to the actual date of conversion, a Lance cadre packet consisting of officers and senior NCOs is trained at Fort Sill for a six-week period. This packet averages two to three captains, six to eight lieutenants and six to 10 NCOs. Often, selected field grade officers destined for battalion command or staff assignments are infused, as are some company grade officers on orders to units already certified. This packet arrives at the unit approximately



90 days prior to the conversion date. This is a problem area since not all packet members assigned to the converting unit arrive. This is particularly true of the NCOs since many orders are amended, delayed or cancelled.

These cadre members are exposed to the unit's existing missile or rocket system and assist in the massive task of preparation for the turn-in of old equipment and insuring that a readiness capability exists until the stand-down period occurs. Prior to the stand-down time, equipment is technically inspected and inventoried. Some common motor items are laterally transferred to other USAREUR units, while Sergeant or Honest John peculiar items are returned to CONUS. A unit will normally be given a stand-down period of approximately two weeks in which to accomplish turn-in of equipment and reorganization of personnel. For example, the Sergeant Missile battalion, consisting of headquarters, a headquarters and service battery and four firing batteries (a heavy battalion), was redesignated as a Lance Missile battalion with a headquarters and headquarters battery, a service battery and three firing batteries. A non-divisional Honest John battalion, consisting of headquarters, a headquarters and service battery and three firing batteries, was restructured into a Lance battalion configuration.


Beginning on the conversion date, the Lance cadre is utilized as instructors on the Lance system. Another problem area presents itself during this phase. The training of the packet is excellent with regard to familiarization of the Lance equipment and the fire direction procedures involved with the Lance gunnery problem. The weakness appears in the area of special weapons. The basic mission of all Lance units will include the phraseology

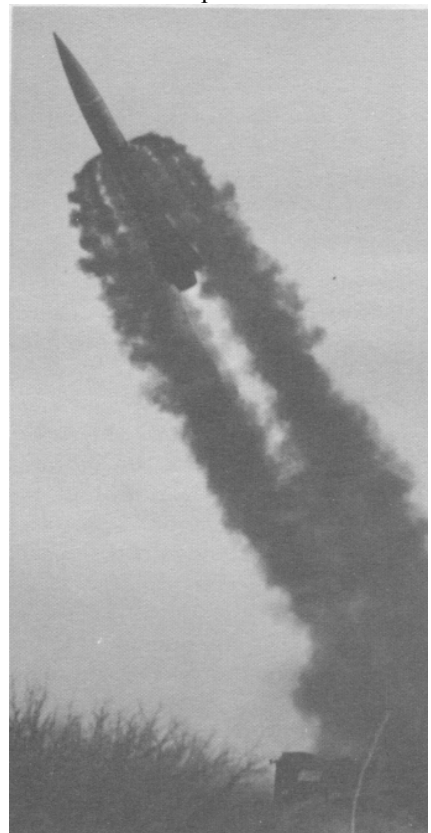
"to provide nuclear fire," yet a lack of training exists in preparing the cadre for this responsibility. Familiarity with the warhead manual and the myriad of regulations concerning the conduct of a TPI are not provided to cadre students. They never physically see the warhead manual or develop an overview for the conduct of a TPI. Although both the Sergeant Missile and Honest John Rocket units have previously established TPI procedures, the time must be spent to provide detailed training to the cadre on special weapons techniques. Such concepts as pertain to a Field Storage Location (FSL) must be absorbed by all cadre members in an extremely short period of time; however, it is desirable that this training be conducted at the unit as opposed to Fort Sill because of the more definitive USAREUR regulations governing the conduct of a TPI. An expansion of the 90-day certification period or night schooling would allow time for this training.

All converting units establish a program similar to a condensed Advanced Individual Training (AIT) to train Sergeant Missile crewmen (MOS 15B) and Honest John Rocket crewmen (MOS 15F) on the Lance system. This training normally commences on the day of conversion and runs for a two-week period, allowing intensive hands-on training. School trained Lance Missile crewmen (MOS 15D) are used as assistant instructors during this training phase. Each unit will receive approximately 20-30 Lance crewmen from Fort Sill AIT programs. These crewmen are well-trained and screened prior to their arrival at the unit and are a definite asset during the conversion. Sergeant Missile units must also pick and train fire direction (15J) personnel from existing resources as the Sergeant Missile system utilized

an electronic computer on the launcher platform to compute the fire mission. Honest John units must be prepared to cross train their fire direction personnel in the new Lance methods since a meteorological message is no longer required and the format for computation is different.

Upon completion of this basic introductory training, units begin to train at the section level, with emphasis on crew drill and section integration. Then, depending on which major event is scheduled first, the unit will train as a battery or battalion with an orientation toward TPI or ORT. The time frame for training for each event is extremely limited considering that after the initial unit AIT phase, only 10 weeks remain for training and conduct of all three events.

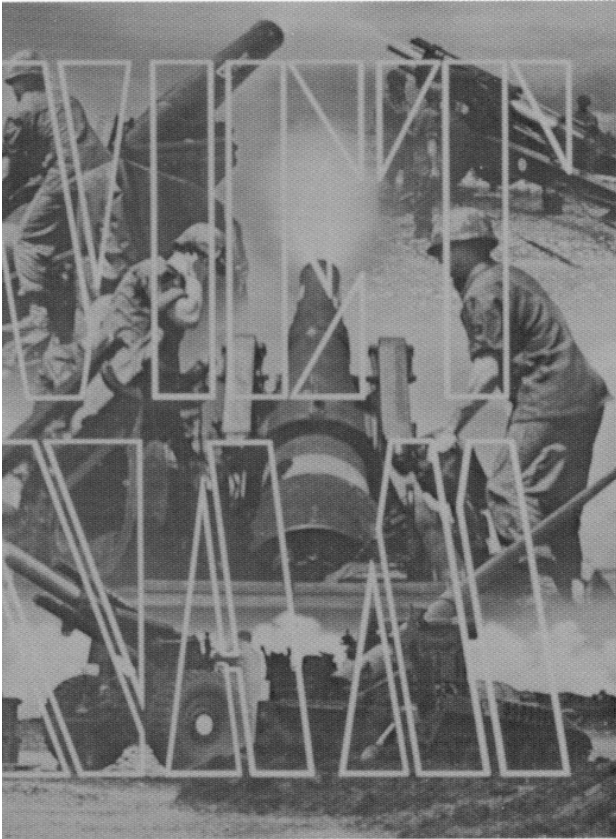
Undoubtedly, the highlight of the conversion is the return to White Sands Missile Range for live firing where the fruits of labor are witnessed in action. Conversion, certification and the recycling of an obsolete battalion are complete. 



**Firing of Lance missile.**

**CPT George A. Harmer, FA, is assigned to Headquarters and Headquarters Battery, 8th Infantry Division Artillery.**

## Part II The Field Artillery in Vietnam



# In Order To Win

by **MG David E. Ott**

Commandant, USAFAS

By late 1964 it was apparent that the South Vietnamese could not win the war alone despite heavy infusions of US equipment and advisers. Most of the country was either firmly controlled or hotly contested by the enemy. The South Vietnamese Army's weekly casualty rate was equivalent to a full battalion, a rate that could not be long sustained. To complicate matters further, the enemy was concentrating forces in II Corps Tactical Zone in preparation for a major offensive to cut the country in half at National Highway 19. Accordingly, then President Lydon B. Johnson, acting under authority of the Gulf of Tonkin Resolution, ordered US combat forces to South Vietnam. The first troops, US Marines represented by the 9th Marine Expeditionary Brigade, arrived on 8 March 1965. They were followed two months later by the 173d Airborne Brigade. Combat troops continued to arrive over the next three years until the total commitment was equivalent to over 10 divisions—two Marine divisions, seven Army divisions, three separate brigades and an armored cavalry regiment plus requisite control headquarters and support.

More than two battalions of field artillery arrived in Vietnam for each combat brigade—one battalion in direct support for each brigade and the remainder provided augmenting fires or area protection. The very size of the field artillery indicated that it was being counted on heavily to provide a major portion of the combat power required to win. Artillerymen at all levels were challenged to insure that so large and important a force be employed to its maximum effectiveness.

For field artillery units to be effective from the outset of their introduction to the war, they had to arrive in Vietnam well trained. In the United States, commanders of field artillery units alerted for deployment to Vietnam carefully planned and executed intensive training programs for their troops. There was little time and much to be done.

All field artillery headquarters, from division artillery and artillery group down, underwent intensive training centered on employing their units against irregular forces. Battalions conducted section, battery and battalion training which culminated, when possible, in field training exercises to test unit proficiency. Battery commanders emphasized platoon operations and gunnery and fire direction procedures in the 6400-mil environment. They foresaw the need for additional fire direction center (FDC) personnel in the event their battery weapons were split among several locations. As a result, time permitting, survey and howitzer crews were cross-trained in FDC procedures. In addition, classes and practical exercises were often conducted during the warmest part of the day in order to acclimatize soldiers to tropical heat.



CH-47 slings M102 howitzer rigged with A-22 "piggyback."

### **Impact of Vietnam on FA Organizations**

Not in recent history had the US Army faced an insurgent force of such significance on terrain that so favored the enemy as in Vietnam. Since the enemy largely dictated how the war would be fought, it was necessary for the Army to modify established operational doctrine considerably to be successful against him. These modifications had a tremendous impact at all organizational levels.

### **Organization for Vietnam**

The war in Vietnam was anything but conventional. The enemy was not contained by a line of friendly forces. Instead, he operated throughout the country, mostly in small units, but massing formidable strength when and where he chose. Accordingly, military ground operations were characterized by numerous, concurrent, widely dispersed, small unit operations. These tactics permitted continuous pursuit of the widely scattered enemy. To insure that the maximum area was defended by available troops, a section of terrain called an area of operations (AO) was assigned to each ground unit from the highest level

down. A ground force commander conducted operations throughout his assigned area. The two field force commanders divided their areas, each corresponding to one of the four South Vietnamese military regions, among their divisions. The division in turn divided its territory into brigade AOs. Brigades split their areas among their battalions; battalions, among their companies.

The wide dispersal of maneuver forces required significant changes in the employment tactics of supporting artillery. The size of brigade AOs and range limitations of the cannons prevented a direct support (DS) battalion from massing the fires of its batteries in support of an entire brigade. Instead, artillery was disposed to provide the maximum area coverage, with each of the three batteries of a battalion in direct support of one of the three maneuver battalions of the brigade. The infantry battalion commander and the supporting battery commander were jointly responsible for insuring that the battery was always positioned to cover adequately all maneuver forces of the battalion.

Fire direction was no longer centralized at the field artillery battalion but was decentralized to battery level

or, when the battery was forced to occupy two positions, to platoon level. The primary justification for centralizing fire direction is the ability to mass fires. Now that that ability no longer existed, the best place to control fires was at the battery, where the commander could best appreciate the needs of the supported infantry battalion. Firing batteries were isolated with their supported battalions. They did not have the freedom of movement they would have on the conventional battlefield but moved with their supported infantry battalions and were protected by these battalions. Wire communications were vulnerable, and radios were used exclusively for communicating beyond defensive positions. Because of the distances involved, a battery, without freedom of movement, could do little to support itself administratively or logistically without increased assistance from its parent battalion.

Small friendly units operating throughout the area of operations were difficult to pinpoint and added to the difficulties of providing supporting fires to ground forces. Artillery forward observers (FOs) with maneuver companies continuously transmitted position locations to the battery, but the terrain made land navigation difficult and there was always the possibility of a mistake by the FO. Any mistakes could have resulted in friendly casualties. Out of respect for that danger, an infantry battalion commander rightfully restricted the activities of his DS battery until its men had demonstrated their competence to his satisfaction. This took several weeks at best. Once his confidence was won, the commander loosened restrictions and the total combat system worked as it had been designed to work. Fires were planned and executed within general guidance from the ground commander, who was then free to devote his attention to the maneuver plan.

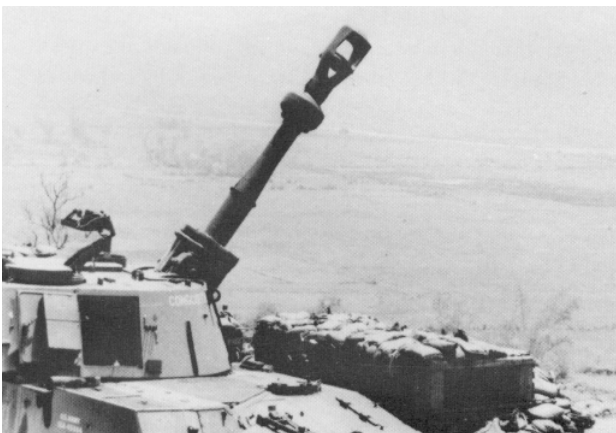
The artillery and infantry have always had a close working relationship, a requirement if maneuver and fire support are to be completely complementary. This relationship was never closer or more important than in Vietnam. The artillery battery was isolated with its supported infantry battalion. Each was dependent on the

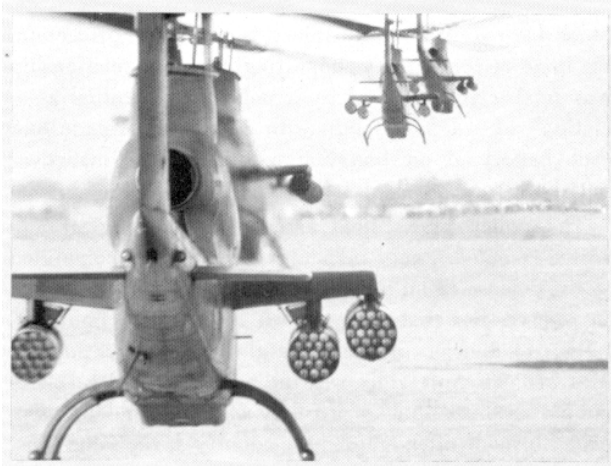
other for survival—the artillery for infantry protection, the infantry for artillery supporting fires. The relationship was further strengthened by a policy of "habitual association" of a DS battalion with a specific brigade and each battery of the battalion with a specific maneuver battalion.

The policy of habitual association was logical and easily executed. Every maneuver brigade was committed to the defense of an area of operations; none was placed in reserve. For that reason, each of the three light battalions of division artillery was always in direct support of a brigade. So rigidly was the policy of habitual association enforced that an artillery battalion and its associated brigade often entered the country at the same time, remained together throughout their involvement there and withdrew from Vietnam or stood down together.

Vietnam also had its impact on the activities of the division artillery. With each of his light battalions in direct support of a maneuver brigade, the division artillery commander was powerless to vary their tactical mission or otherwise rearrange the support they provided. The only unit remaining with which he could influence the action was his heavy battalion, which generally consisted of three 155-mm batteries and an 8-inch battery. He would direct the batteries of the heavy battalion to provide additional fires where he thought they were most needed. Often one of his 155-mm batteries was committed to the direct support of the division cavalry squadron, reducing his flexibility to influence the action even more. Furthermore, distances and the situation prevented the division artillery commander from utilizing his remaining artillery as responsively as he could in conventional operations. Heavy artillery was positioned in advance of an operation and moved only infrequently, if at all.

Since the capability to influence the battle at division artillery level was reduced, the work load normally associated with the capability was also reduced. Yet as the responsibilities of the division artillery commander were lessened in one area, they were increased in others. The wide dispersal of artillery units increased the problems of supply and maintenance, and staff officers were kept busy seeking ways to increase the support the battalions could provide to their batteries. Trucks and helicopters for hauling supplies were sought out and requested. Needed maintenance and administrative support was arranged for battalions to send to isolated batteries. In addition, the division artillery commander was responsible for contributing forces, weapons and equipment to the defense of the division base camp or for directing the entire base camp defense. Also, because winning the support of the population was so important





**AH1G Cobra.**

to the success of a counterinsurgency war, added emphasis was placed on civil affairs and the work load in that area expanded considerably. Division artillery staffs were augmented with an officer to plan and direct civil affairs activities and to coordinate those of subordinate battalions.

The work load of the division artillery commander in other areas was much the same as it had always been. He was still the adviser to the division commander on fire support matters. Intelligence had to be gathered and collated continuously and actions of division maneuver forces and artillery updated. A fire support element (FSE) at division had to be established to support ongoing maneuver operations. And the use of nondivisional fire support means, including field artillery, Air Force tactical air and strategic bombers and naval air and naval gunfire, had to be planned, requested and coordinated.

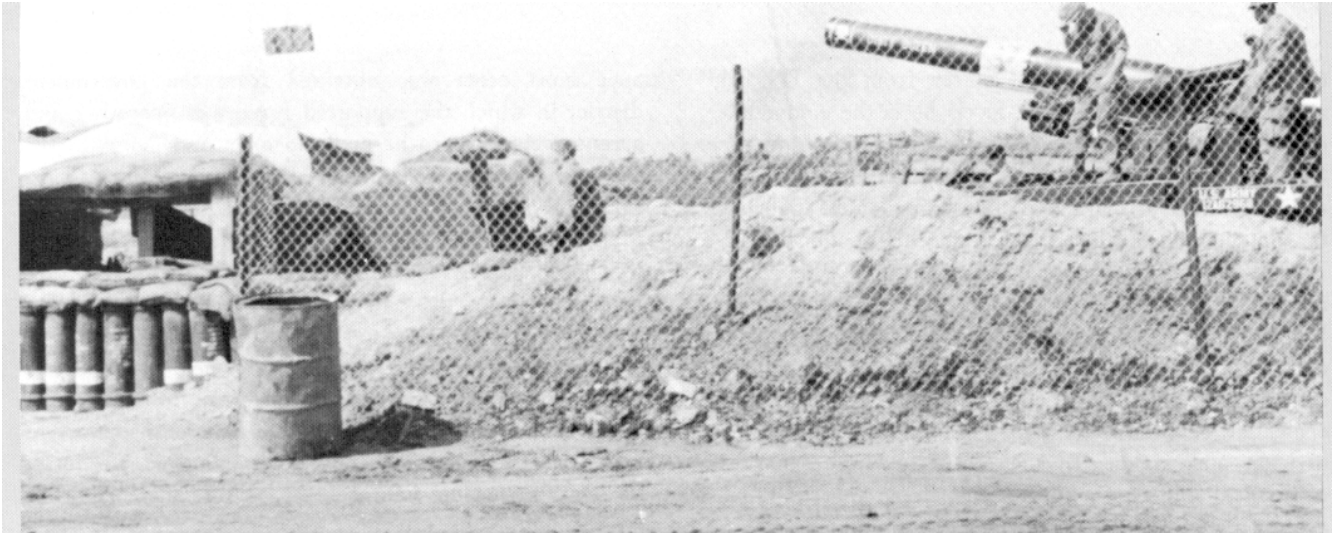
As in conventional operations, there were large amounts of field artillery in addition to that organic to divisions; however, the manner in which it was organized and employed was vastly different. In a conventional operation, nondivisional field artillery normally is at the field army level and is apportioned to corps on the basis of their needs. US Army, Vietnam (USARV), was organized into two field forces and a separate corps. The field force, a new organization to the Army, was roughly equivalent in level of command to a corps but had greatly expanded supply and administrative responsibilities. The corps, on the other hand, was a tactical headquarters and its lean staff could only coordinate logistical activities. In Vietnam, field artillery was assigned on a permanent basis to each of the field forces and the separate corps. This practice recognized that the requirements of each command tended to remain stable and that the long distances involved precluded continuous shifting of artillery from one field force to another. The stability of artillery

requirements of the two field forces and the separate corps was a result of the mission assigned to nondivisional artillery. Whereas divisional artillery supported specific US maneuver operations, nondivisional artillery served in an area support role, a role that was new to the field artillery yet vital under the circumstances.

Of overriding importance in Vietnam, as in any counterinsurgency action, was winning the support of the people for their government. They had to be shown that the government could improve their lot as well as protect them from the insurgent. Field force artillery firing units were positioned to provide maximum coverage of population centers, lines of communication and government installations. Firing units answered calls for fire support from any friendly party, civil or military, within range. The position location of each unit had to be carefully planned in relation to the position locations of all others. This planning was done at field force level. In past wars commanders at such high levels were not concerned with the positioning of individual firing units; subordinate artillery commanders had the authority to decide within liberal territorial limitations where units could best be placed to perform their mission, but in Vietnam much of the responsibility for positioning their units was taken from them.

As was true of division artillery, commanders of groups and battalions in field force artillery had increased work loads in other areas as a result of added logistical support problems and civil affairs and position defense responsibilities. Also, the role of nondivisional artillery created a requirement for continuous dialogue with local government representatives and supported military and paramilitary forces. Such dialogue was necessary not only for the artillery to do its job but also for it to survive. Firing units providing area cover were often far from US maneuver forces and had to turn to the Vietnamese for protection.

Commanders of both division and field force artillery in Vietnam continued the practice of providing fire support through mission assignment, though the meanings applied to the missions were somewhat changed. Since units were so widely dispersed, a single artillery unit normally could not be positioned to augment the fires of several other artillery units. Instead, general support became area coverage. For units of divisional artillery, area coverage placed primary importance on plugging gaps in the coverage of DS units. For units of field force artillery, area coverage placed primary importance on supporting all friendly forces within range of their positions. Thus, quite contrary to its normal meaning,



**D Battery, 3d Battalion, 13th FA, at FSB Stuart in June 1969. Chain link fence has been installed for defense against B-40 rockets.**

the mission of general support was often given to a unit that had no other field artillery within range. The meaning of the reinforcing mission changed little. Reinforcing artillery still augmented the fires of a specific artillery unit. General support-reinforcing artillery was positioned to augment the fires of a specific field artillery unit but otherwise provided area coverage.

Another change occurred in respect to batteries too distant from their parent battalions to receive control or support. The practice in the past had been to attach such batteries to their supported maneuver battalions, but in Vietnam such an arrangement was not fully satisfactory. Maneuver commanders had neither the equipment nor the expertise to support artillery units adequately, particularly for lengthy operations. And field artillery commanders, who were schooled and experienced in the employment of artillery to serve the maneuver forces best, were unable to influence the situation. Instead of attachment, the status of operational control (OPCON) was most often used. For example, if a firing battery was to be separated from its parent headquarters, it was placed under the OPCON of another artillery battalion headquarters in the area in which the battery was employed. A battery that was under the OPCON of a field artillery battalion was controlled by that battalion but continued to receive support from its parent battalion. Maneuver commanders could then receive the best possible fire support without being burdened with additional support requirements.

Though operational control served a useful purpose, its use complicated operations of battalions of both divisional and nondivisional artillery units. At any one time, one battalion might be controlling its own three batteries plus several others that were under its OPCON. Another battalion might have lost the OPCON of all its

organic batteries to another battalion. Artillery battalions had to be flexible enough to direct the operations of a varying number of batteries.

On numerous occasions artillery units were employed in ways quite contrary to the general practice that had been developed in Vietnam. Division artillery normally supported divisional maneuver forces whereas field force artillery served in an area support role. Yet on any one day during the height of the US commitment, one could point out numerous cases in which the roles were reversed. For example, when division artillery supported divisional maneuver units in such rugged terrain that its organic 155-mm self-propelled howitzers could not follow, the division artillery commander might be provided with airmobile 155-mm towed howitzers from field force artillery for the duration of the operation. There were also frequent occasions when field force artillery units were placed in direct support of maneuver units and many times division artillery units provided area support.

### **Fire Support Coordination**

The responsibility for coordinating the various types of fires available to the maneuver commander falls largely on the field artillery. At all maneuver headquarters above company level, an artillery fire support coordinator (FSCOORD) is responsible for coordinating all available fire power—field artillery, armed helicopters, Air Force and naval tactical air, air defense weapons in the ground support role and naval gunfire. In addition, an infantry battalion commander often delegates responsibility for coordinating the battalion heavy mortar fire to an FSCOORD. At maneuver company, the company commander is the FSCOORD though a field artillery FO is available to aid and advise him. At maneuver battalion



the coordinator is a liaison officer from the DS field artillery battalion. At higher levels he is the commander of the artillery supporting the force; however, in practice he delegates the detailed coordination activities to a subordinate. The artillery battalion commander delegates the duty to the artillery liaison officer with the brigade. The division and corps (or field force) artillery commanders delegate the duty to an assistant coordinator. Within each of the operation centers of maneuver forces, a coordinator establishes and supervises a fire support coordination activity, called a fire support coordination center at battalion and brigade level and an FSE at division and higher. In the center are representatives of all available fire support units. Some representatives are not included in the FSE, being normally found elsewhere in the tactical operations center; but their presence in the center still allows efficient coordination.

The field artillery liaison officer (now titled the fire support officer) with either a maneuver battalion or brigade was tasked in Vietnam as never before. Because of advances in weapon technology, more types of fire support were available. To complicate matters, each type of fire support could deliver a host of different munitions, each designed for a different job. The field artillery liaison officer was the one who insured that the most appropriate ordinance available arrived at the right targets at a specified time and that all the fires delivered complemented one another. Besides having more weapons to coordinate, he often had to support not only US Army forces but also Vietnamese military and paramilitary, Korean, Australian, Thai, New Zealand, Philippine and US Marine forces during joint operations. This task required more than processing and passing requests to the appropriate support means; it required establishing priorities as well as insuring that the organic fires of the other force were coordinated with the support being requested. This frequently called for him or an Army FO to be on the scene to request and direct or coordinate the fires. His efforts were further complicated by differences in language and in operating procedures.

As if such complications were not enough, he was required to obtain clearance to insure that no civilians were in the area before employing any weapons. Clearance



**HU1B "Huey" with 2.75-inch rockets.**

most often was obtained from the government district in which the supported force was operating and arrangements had to be made to open and maintain the necessary radio nets in advance of an operation. Clearance had not been required in past US wars, in which the enemy was engaged forward of a battle line and was not operating among the friendly population. Another responsibility of the liaison officer that was peculiar to Vietnam was the coordination of air space. Artillery warning control centers were established, normally at maneuver battalion and brigade levels, to advise the numerous aircraft over the AO of current supporting fires. All fire support means were required to notify the warning center before firing. Aircraft entering the area would, in turn, contact the center and receive current information plus a flight path to follow to avoid firings.

### **FA Weapons**

The wide variances in the types of field artillery weapons sent to Vietnam gave senior artillery commanders great flexibility in tailoring fire support to satisfy the needs of the situation.

The 105-mm towed howitzer most often served in the DS role. Its light weight, dependability and high rate of fire made it the ideal weapon for moving with light infantry forces and responding quickly with high volumes of close-in fire. Units were initially equipped with the M101A1 howitzer, virtually the same 105-mm howitzer that had been used to support US forces since World War II. In 1966 a new 105-mm towed howitzer, the M102, was received in Vietnam. The first M102s were issued to the 1st Battalion, 21st Field Artillery, in March 1966. Replacement of the old howitzers continued steadily over the next four years.

Many of the more seasoned artillerymen did not want the old cannon replaced. Over the years they had become familiar with its every detail and were confident that it would not disappoint them in the clutch. Old Redlegs could offer some seemingly convincing reasons why the M101 was still the superior weapon: its waist-high breech made it easier to load; it had higher ground clearance when in tow; but most important, it was considerably less expensive than the M102. Their arguments, however, were futile. The new M102 was by far the better weapon. It weighed little more than one and a half tons whereas the M101A1 weighed approximately two and a half tons. As a result, more ammunition could be carried during heliborne operations and a three-quarter-ton truck rather than a two and a half-ton truck was its prime mover for ground operations. Another major advantage of the M102 was that it could be

traversed a full 6400 mils. The M101A1 had a limited on-carriage traverse, which required its trails (stabilizing legs) to be shifted if further traverse was necessary. A low silhouette made the new weapon a more difficult target for the enemy, an advantage that far outweighed the disadvantage of being somewhat less convenient to load.


Certain field force artillery units were equipped with the M108, a 105-mm self-propelled weapon. The weapon was obsolete but was still in the US field artillery inventory. In Germany, it had been replaced by the 155-mm self-propelled howitzer as the DS artillery for US armored and mechanized divisions. The M108 was too heavy to be lifted by helicopter, so its support of highly mobile light infantry forces in Vietnam was restricted. Still, the M108 was employed effectively in the area support role and, if the terrain permitted, in support of ground operations.

The next larger caliber artillery weapon was the 155-mm howitzer. Firing units were equipped with either the towed M114A1 or the self-propelled M109. Both weapons normally provided area coverage or augmented DS artillery. Occasionally, however, the 155-mm self-propelled howitzer was used in direct support of maneuver units, as with the 1st Brigade, 5th Mechanized Division. Also when a divisional cavalry squadron operated as an entity, it was often provided a 155-mm battery for direct support. Like the M108, the towed M114A1 was considered obsolete. It was no match for the 155-mm self-propelled weapon for supporting conventional ground operations against a highly mobile, armor-heavy enemy. In Vietnam, however, the M114A1 proved invaluable because it was light enough to be displaced by helicopter and could provide medium artillery support to infantry forces even where roads were nonexistent. The 155-mm howitzers, whether towed or self-propelled, had a maximum range of 14,600 meters, over 3,000 meters greater than that of the 105-mm howitzer. The weight of the 155-mm projectile, 95 pounds, was almost three times the weight of the 105-mm projectile. For these reasons, the 155-mm howitzers provided a

welcome additional punch to existing DS weapons.

The M107 self-propelled 175-mm gun and the M110 self-propelled 8-inch howitzer had identical carriages but different tubes. The 175-mm gun fired a 174-pound projectile almost 33 kilometers. This impressive range made it a valuable weapon for providing an umbrella of protection over large areas. The 8-inch howitzer fired a 200-pound projectile almost 17 kilometers and was considered the most accurate weapon in the field artillery. The 8-inch howitzer was found with most division artillery units, and both the 8-inch howitzer and 175-mm gun were with field force artillery. At field force the proportion of 8-inch and 175-mm weapons varied. Since the weapons had identical carriages, the common practice was to install those tubes that best met the current needs. One day a battery might be 175-mm; a few days later it might be half 175-mm and half 8-inch.

Aerial rocket artillery proved to be extremely effective in augmenting and extending the range of the cannon artillery of the airmobile divisions. Aerial rocket artillery units initially employed the UH1B or UH1C (Huey) helicopter equipped with a weapon system that could carry and fire forty-eight 2.75-inch rockets. In early 1968 the improved AH1G (Huey Cobra) was outfitted as an aerial rocket artillery aircraft. Its maximum speed of 130 knots was some 30 knots faster than that of the Huey. In addition, it carried a larger payload of 76 rockets. In early 1970 the designation of aerial rocket artillery was changed to aerial field artillery (AFA). By either name, it was in every sense a field artillery weapon system, organized as such, and the AFA was controlled by artillerymen through artillery fire support channels.

*(We will conclude Chapter III, "In Order to Win," in our next issue with discussions on mobility, fire bases and base camp defense as well as riverine artillery.—Ed.)* 


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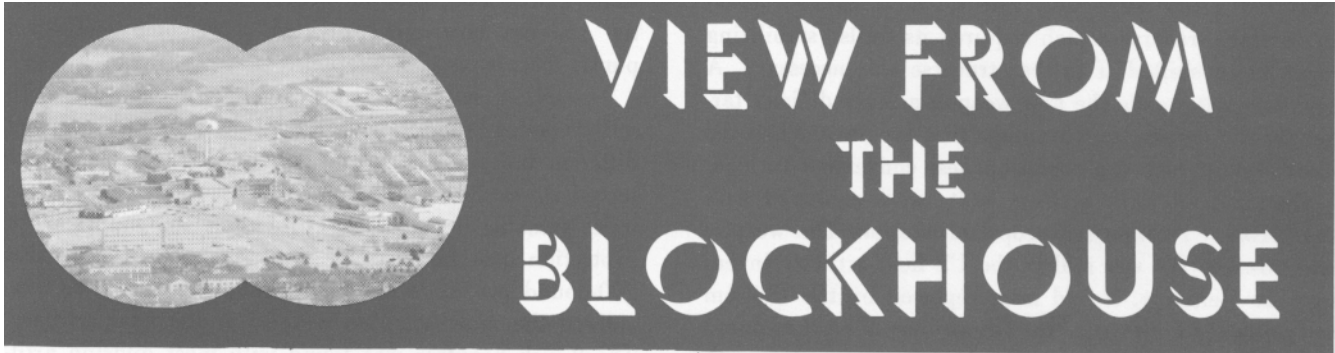
## The 1973 Nearest War

*(Continued from page 19)*

In addition, this war has demonstrated that:

- A war with modern weapons does not just last for days.
- Every war must not necessarily lead to worldwide escalation.
- Crisis management by the superpowers and their partners is necessary to localize a war.

- The superpowers must stand in a balance of power and must bring the war waging countries into a corresponding balance of strength through crisis management.
- An arms race can lead not necessarily to war but, as a political tool, can also lead to détente.
- Unilateral action toward détente can disturb the balance of power and in that way possibly lead to the loss of freedom [for the country which acted unilaterally]. 



## T & E In Forefront of Materiel Development

Since its inception a little over a year ago, the Test and Experimentation Division of the Office of the Deputy Assistant Commandant for Combat Development has been in the forefront of the materiel development activities at Fort Sill and the Field Artillery School. One of the significant aspects of the 1973 reorganization of the CONUS Army was the designation of the FA School as a "user" in the materiel development process. Testing was separated into two categories: developmental and operational. Operational testing is the responsibility of the various service schools.

As test managers, the Test and Experimentation Division is involved with the operational testing (i.e., "hands-on operation") and evaluations as the designated user, combat developer or the trainer. The division also participates in force development testing and experimentation and other evaluations, to include MASSTER tests, CDEC experiments and other special or joint testing activities directed by TRADOC. The day-to-day activities of the division include the preparation, coordination and submission of outline test plans (OTP), liaison with other test agencies and field units and, of course, the conduct of operational tests and in-house experimentations. The ultimate goal is to provide the best possible information so decisions concerning new materiel and doctrine may be made in a timely, efficient and objective manner.

A review of recently completed, as well as on-going, actions provides some idea of the extent that the Test and Experimentation Division is involved with the development of new materiel in all aspects of the Field Artillery. In addition to the operational testing of the M110E2 (May-June 1974 *Journal*) and the XM204 (September-October 1974 *Journal*), the T&E Division is scheduled to begin the Operational Test II of the XM198 Towed 155-mm howitzer in April 1975. The purpose of the test, directed by the US Army Operational Test and

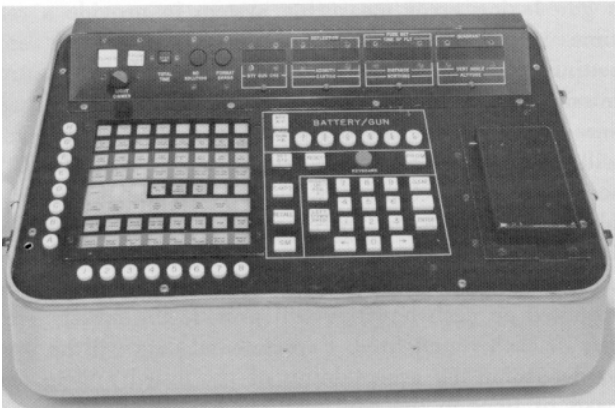
Evaluation Agency, is to determine if the XM198 meets the performance levels specified in the DA materiel needs document for the system. In addition, test firings will be conducted to evaluate the reliability, availability and maintainability (RAM) of the weapon.

In a test in December 1974, the division conducted a comparative evaluation of the British Army's field artillery computer equipment (FACE) with our current fire direction computer, FADAC, and a computer under development at Frankford Arsenal that could possibly be employed by a field artillery battery. Results of the test were to be used to demonstrate reductions in field artillery gunnery system response time and an increase in operational effectiveness using modern high-speed digital computers and a firing section data display.

FACE has been in operation in the British Army for some five years. It is a third generation computer and has a computation time of approximately one half that of FADAC (a second generation computer). FACE, by



**British FACE.**



**Frankford Arsenal computer test bed.**

use of the automated weapon data transmission system (AWDATS) issued to the British Army last year, has the capability to compute firing data for individual pieces and display that data automatically at the firing section, thereby significantly reducing the amount of time required to transmit data to the firing section. In response to a Field Artillery School request for loan of the equipment under the International Standardization Agreements, two FACE computers mounted in Land Rover trucks and a British Army team of four soldiers were sent to Fort Sill to support the test.

The Frankford Arsenal computer test bed, a developmental fourth generation computer, was provided to permit an assessment of the gain that could be provided by the latest developments in computer technology. The test bed also had the capability for computing data for individual pieces and displaying it automatically at each firing section.

The test was conducted as a series of non-firing exercises in which fire direction operations, typical of those performed by a battery fire direction center (FDC), were carried out under field conditions. Three FDCs, equipped with FACE, FADAC and the Frankford test bed, simultaneously received a call for fire from an observer, computed firing data and transmitted that data to a howitzer section, representing that computer's firing battery. Response times were measured from initiation of the call for fire to the reporting of READY by the howitzer section's gunner. The accuracy of firing data computations and application of firing data to the weapons were measured.

Throughout the test the Field Artillery School was not only able to demonstrate the reduction in response time and improvement of operational effectiveness that could be gained by the use of modern computer techniques in the firing battery, but was also able to identify those features in FADAC, FACE and the Frankford test bed which should be incorporated in a new battery fire

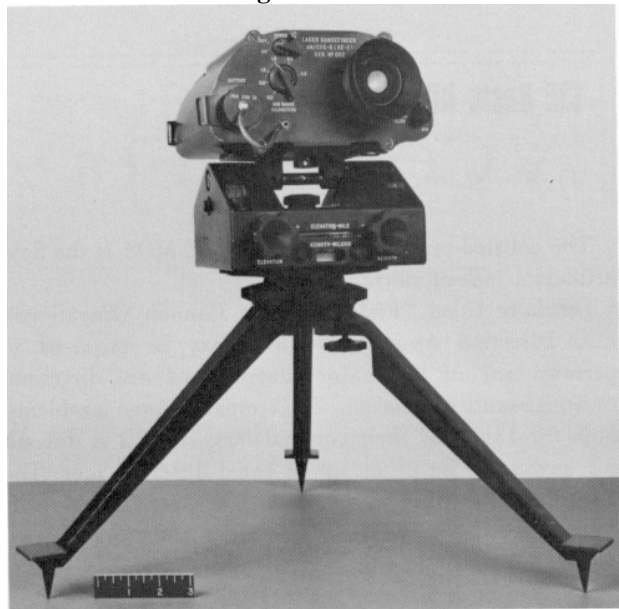
direction computer.

In May 1975 the School and the Army Materiel Command's Human Engineering Laboratory will conduct HELBAT 5, the fifth in a continuing series of field experiments. The experiments will investigate sources of human error in the Field Artillery, develop and test new concepts in technical fire direction and control to reduce system response time and improve system accuracy as well as provide experimental data for use in field artillery studies. This will permit a more accurate definition of future required operational capabilities. The HELBAT series is a basic research and exploratory development experimentation program which is not tied to any particular materiel development program, but is designed to provide the link between field artillery studies and the development of materiel and doctrinal requirements.

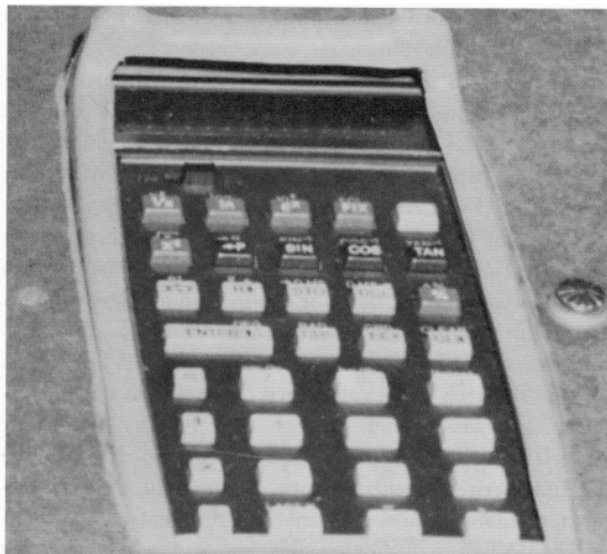
HELBAT 5 will further develop and verify the fire direction techniques that were used in HELBAT 4 (see "HELBAT," May-June 1974 *Journal*). The experiment will investigate laser registration techniques, system accuracy and response times that may be achieved using an integrated fire direction system linking the observer directly to the firing section and measurement of firing section error.

The experiment uses elements of an experimental automated fire direction system. The field artillery observer, equipped with a laser rangefinder in a tracking mount, ranges on his target and automatically furnishes distance, direction and vertical angle from his position to the target to an automated FDC over a wire data line.

### **AN/GVS-5 Laser Rangefinder.**



## View From The Blockhouse



**Hand-held calculator mounted in clipboard.**

The FDC, using a commercial computer and experimental software, automatically computes target location (and future location if the target is moving), computes firing data to that location and transmits that data to the firing battery where it is displayed at the howitzer section. Using all or only parts of this system, reaction times and system accuracies could be measured for a number of different fire control procedures and techniques.

In addition, three new items of experimental hardware will be introduced: Frankford Arsenal's computer test bed; the AN/GVS-5 Laser Rangefinder with lightweight tracking mount linked to the HELBAT computer; and a

gun laying error measuring system to provide a real time record of weapon fire control alignment and settings. A standard observer and FDC will fire control missions to establish a base line against which to measure the results achieved by the automated system and will provide a tie to earlier experiments in the HELBAT series. In conjunction with HELBAT 5, the School also plans to evaluate the increase in accuracy which may be achieved using a new projectile velocimeter or muzzle velocity chronograph. The device which can be mounted on each howitzer will provide the muzzle velocity of each round fired. Experimental data will be used to determine the acceptability of the tested system and basis of issue to the field artillery battery.

The School is also conducting a test of a hand-held calculator for survey. The test will assess the military potential and operational suitability of two types of off-the-shelf commercial calculators in survey applications; and will compare the capability and proficiency of 4th and 5th order field artillery survey parties using the hand-held calculators for mathematical computations and conventional (current) survey procedure. Another area that will be evaluated is whether the TOE can be reduced when hand-held calculators are used for computation. New survey computation forms have been designed for use with each calculator. The test will consist of one week of training and two weeks of field work conducted at Fort Hood, Fort Bragg and Fort Sill. The test was scheduled to be completed by mid-March 1975.

As one can see from the recently completed and ongoing evaluations, the T&E Division is very much in the forefront of the materiel development business.

feature from the school

### 13E Basic NCOES

## A Course For All Seasons

The enlisted man with a primary 13E MOS is the field artillery's jack-of-all-trades.

Officially titled "Field Artillery Cannon Operations/Fire Direction Assistants," 13Es may be required to perform any of the major functions of fire direction, reconnaissance or liaison. This creates some problems, both for 13Es and their commanders, since it is difficult for anyone to be proficient in three different jobs. The situation is further compounded because many 13Es begin their service in other specialties and, for one reason or another, do not receive formal training in the varied responsibilities of their MOS.

This paints a dark picture, but the outlook is considerably brighter for those 13Es who attend the Field Artillery Cannon Basic (FACB) course, a part of the Noncommissioned Officer Education System (NCOES).

Beginning with Class 4-75, which started in January, 13E training in FACB is now under the direction of the Gunnery Department, US Army Field Artillery School (USAFAS), and the course has been extensively reorganized.

Reorganization of the FACB course was prompted by two events during the past several months. First, the Field Artillery School realized that the course was not



**FADAC operation is an important part of the fire direction instruction.**

providing technical training for all of the 13Es' primary assignments (for example, there was almost no instruction related to reconnaissance duties); and, second, USAFAS was directed to reduce the course to eight weeks (from 12) as a part of an Army-wide reduction in NCOES basic courses.

The loss of one-third of the available instruction time required USAFAS to reconsider the purpose of NCOES basic courses. As a result the courses were reoriented toward MOS skill development and now concentrate on training junior noncommissioned officers in the technical skills required to perform their jobs. Various instructional departments were assigned the tasks of reorganizing the courses.

The new objective statement for the 13E FACB course reflects the NCOES basic course reorientation: "To qualify the 13E FACB graduate for duty as a fire direction computer or reconnaissance sergeant and to prepare him for duty as a liaison sergeant." This provides emphasis for the MOS-related aspects of the course and was the basis for the design of the new program of instruction (POI) initiated in January.

The largest block of instruction is still devoted to fire direction. This supports a portion of the course objective intended to provide sufficient time for students to master this crucial subject area. There are 145 periods of fire direction—an increase of 20 percent over the old POI.

The student receives a thorough, accelerated review of subjects taught in Advanced Individual Training, is brought up to date on recent innovations (such as the ABCA registration) and then progresses to more advanced techniques — position and special corrections, replot, improved conventional munitions (ICM), emergency fire direction center (FDC) procedures, observed firing (OF) charts, transfer from observed to surveyed firing charts and nuclear delivery techniques for 155-mm and 8-inch howitzers.

## View From The Blockhouse

Two new USAFAS subjects have also been included—gunnery techniques for survival and responsiveness of fires on the modern battlefield. The FACB fire direction instruction is designed to make the 13E graduate proficient in the procedures he is likely to need in a cannon battery or battalion FDC.

A new feature of the course is remedial fire direction instruction, presented during the second week to assist pupils who have had little recent FDC experience or training. This training is intended to improve their knowledge so they can begin the graded gunnery instruction on a relatively equal basis with the other students. Scores from a diagnostic examination, which covers basic fire direction procedures and precision fire, determine who will attend remedial instruction. The examination is administered as a part of the inprocessing. The scores are not recorded as part of the students' academic records but those who fail to achieve a score of 70 percent receive 20 periods of concentrated fire direction instruction.

For the first time, FACB is devoting considerable attention to OF training. This is consistent with the portion of the new course objective that aims at qualifying graduates for duty as reconnaissance sergeants. Observed fire now includes 16 periods of instruction (three times the previous amount) and five service practices (earlier classes had only one). An OF examination has been added and students are graded on their performance as forward observers during the service practices. Prior to Class 4-75, there were no OF grades.

Observed fire subjects include duties of the observer, target location, the call for fire and adjustment of fire. These are presented in FDC shacks where the instructors use the Fort Sill terrain to assist them in realistic demonstrations of the proper techniques. Reinforcement is provided by a practical exercise on a "puffboard" terrain model before the first service practice.

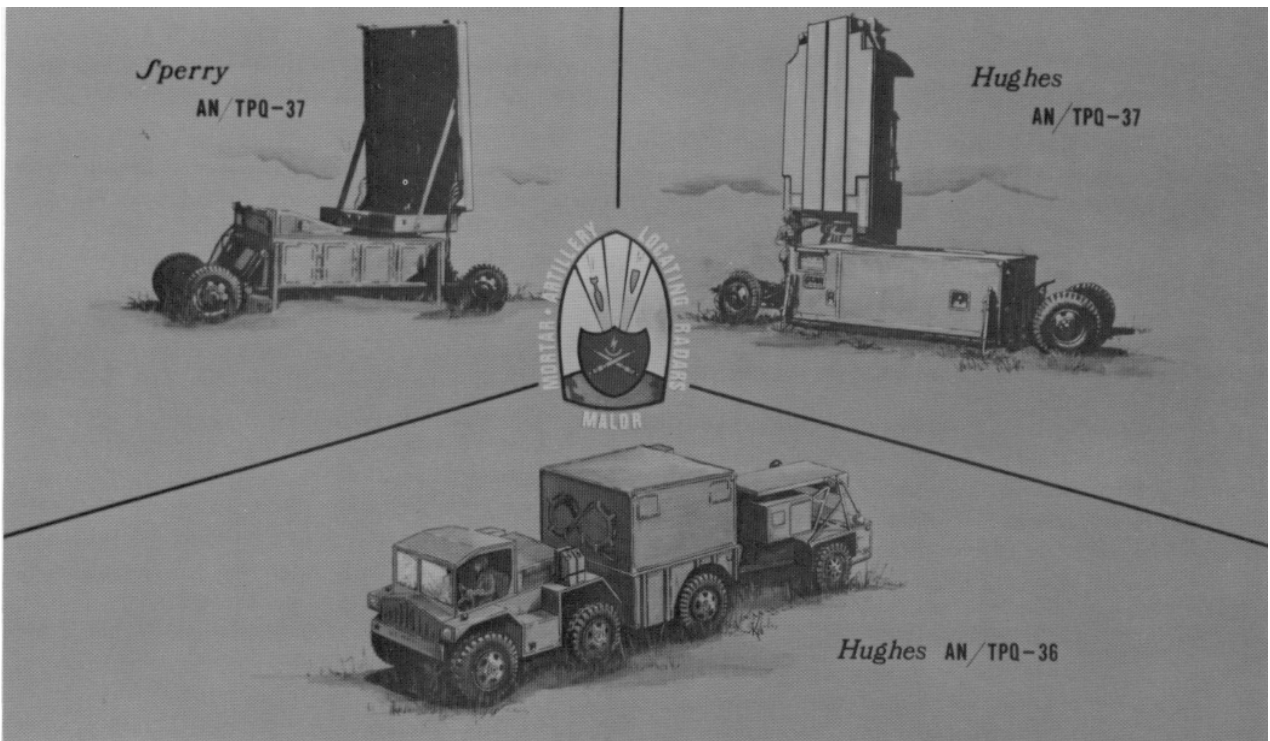
In addition to gunnery, the course provides valuable MOS-related instruction in other subjects. These were selected in accordance with the MOS study guide and from recommendations by various USAFAS departments.

Map reading, materiel and communications knowledge are essential in any 13E assignment and are included in the new POI. There is also MOS-related instruction in fire support coordination and fire planning. These are considered most critical for graduates who will work in liaison positions.

Unit commanders who select promising 13Es for FACB will benefit by receiving highly-qualified specialists after graduation and by the knowledge that these young professionals will be even more competitive for promotion and future military schooling.







# MALOR

by  
**COL William J. Harrison**

"INCOMING!" This cry of alert sends men scurrying for cover. The first warning of an attack by mortars, rockets and artillery comes with the whine of a projectile and the sound of an explosion.

Artillery crewmen respond immediately with counterfire while other artillerymen try to determine the origin of the incoming rounds. SHELLREP teams are dispatched to examine craters for a back azimuth and determination of an estimated range. Flash and sound outposts may be able to report azimuths allowing for triangulation to the muzzle blast of the weapon.

Experience has shown that the most accurate and responsive means of locating the origin of incoming rounds is radar. The AN/MPQ-4A Weapon Locating Radar has provided this capability since 1958. Although this radar performed acceptably in Vietnam, its 25 degree sector was inadequate to provide coverage required for fire bases, airfields and cities. Its 10 kilometer (km) range, adequate for effective mortar location, is insufficient to locate longer range artillery.

A major shortcoming in the AN/MPQ-4A is that the operator must continuously monitor the radar scope. Operator fatigue and

efficiency drain caused by such continuous monitoring require frequent rotation. Another shortcoming is the inability of the AN/MPQ-4A to locate weapons firing simultaneously from different positions. Location of these multiple firing positions with sufficient speed and accuracy for effective counterfire demands the responsiveness that only automation can provide.

Currently under development for the Army are two automatic weapon locating radars: the AN/TPQ-37 Artillery Locating Radar and the AN/TPQ-36 Mortar Locating Radar. These radars will provide the new capabilities of automatically locating weapons at long ranges firing from multiple positions and providing the weapon locations automatically to TACFIRE.

Success has been elusive in all previous attempts to develop a radar to locate hostile artillery. Attempts in the 1950s with the AN/TPQ-5 and in the 1960s with the AN/MPQ-32 were insufficiently promising to justify production of these systems. There were, however, enough positive results to warrant continued interest and research into the radar solution to the weapons locating problem.

The most recent attempt to solve the artillery location problem was initiated in 1972 with the award of contracts to Hughes Aircraft Company and Sperry Gyroscope. A program with competitive prototype development was selected to minimize the risk in solving a challenge which so far had been beyond solution. Each contractor was given less than three years to design, develop and build a single advanced development model of an artillery locating radar.

The challenge of an automatic artillery locating radar development is two fold. The radar transmitter must be sufficiently powerful and the receiver sufficiently sensitive to illuminate and detect the very small artillery projectile over a 10 km distance. Secondly, the computer software in the radar must be "intelligent" enough to decipher returns from artillery projectiles, while eliminating returns from birds, planes, clouds, rain and other sky clutter.

Requirements (which are classified) stated in the materiel need for the AN/TPQ-37 include range, probability of location, accuracy, speed of

location and the ability to locate several weapons firing simultaneously from different positions.

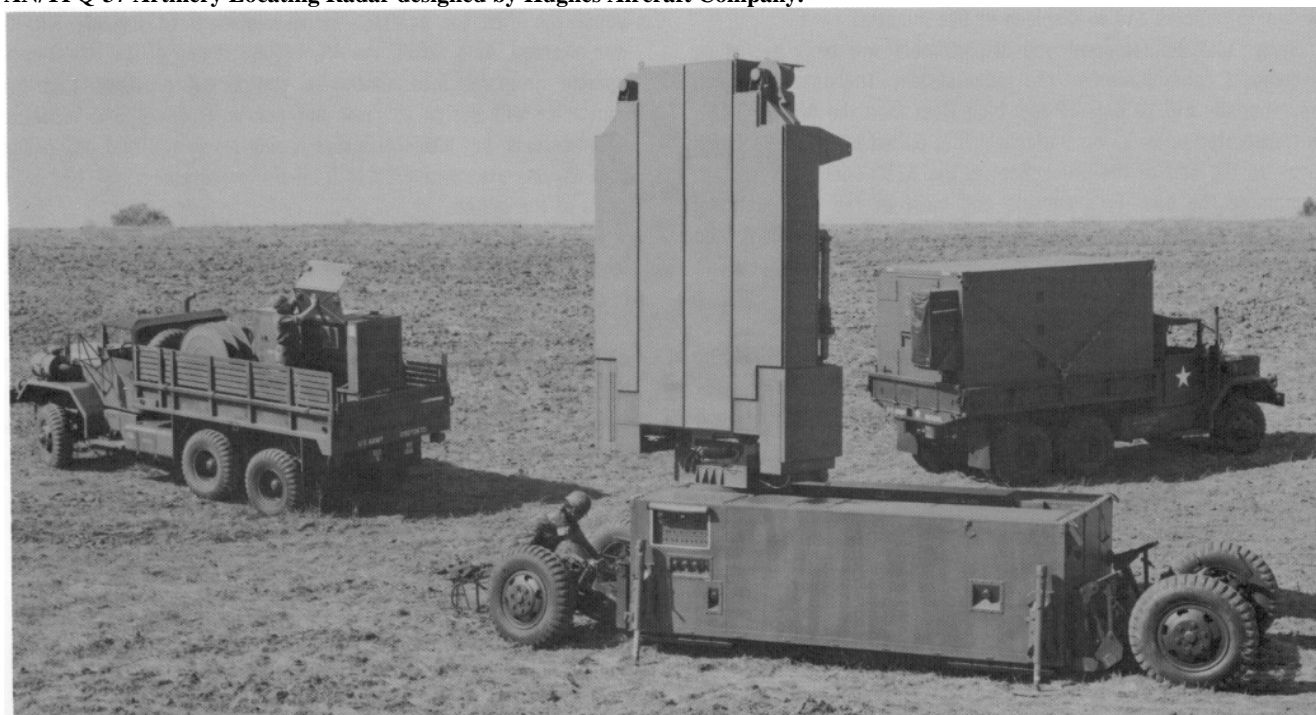
Initial indications are that success in solving the problem of locating artillery may be at hand. Both contractors' radars are currently at Fort Sill, and during their shakedown preparations for the development and operational testing to be conducted during the remainder of 1975, locations have achieved design ranges, with good accuracy and satisfactory probability of location.

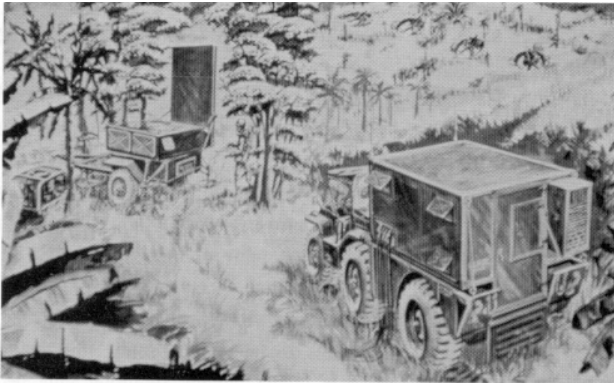
The ambitious requirements of range, accuracy and probability of location dictated the antenna size. As a result, when emplaced, the artillery locating radar stands 18 feet high. Despite this operational size, the radar system is highly mobile, requiring only two vehicles — one 2½-ton and one five-ton truck — for cross-country mobility. On the bed of the 2½-ton truck is the S280 operations shelter, providing space for the operators and containing most of the signal processing and computer hardware. The five-ton truck carries the system generator and pulls the antenna trailer. System set up time is 30 minutes, with displacement possible in 15 minutes.

Air mobility can be provided in C130 aircraft or by CH47 helicopters. Three CH47 helicopters can lift the operational components: generator, operations shelter and antenna.

Since the United States has no effective means of locating artillery (a situation that will persist until the AN/TPQ-37 is fielded), the development schedule for the AN/TPQ-37 is both ambitious and optimistic, with the optimism based on the extensive analysis conducted prior to initiation of the contractual effort. The success-oriented schedule calls for entering low rate production following completion of the advanced development phase, bypassing engineering development, which would normally precede production. However, to insure sufficient operational testing prior to production, selected modifications will be incorporated into the two advanced development models after completion of the initial operational tests. Only after these modified radars have been subjected to additional operational testing will production be initiated with the winner of

#### **AN/TPQ-37 Artillery Locating Radar designed by Hughes Aircraft Company.**





**Artist concept of AN/TPQ-36 Mortar Locating Radar.**

the competitive development, providing an initial operational capability in 1980.

### **Mortar Locating Radar**

Location of mortars is less challenging than location of artillery, but tactical and operational considerations resulted in a materiel need for a separate radar. The AN/TPQ-36 Mortar Locating Radar is under development to satisfy the requirement for a highly mobile, smaller system that can be emplaced and operated close to the front line as a part of the division artillery direct support battalions.

As with the AN/TPQ-37, the requirements stated in the materiel need for the AN/TPQ-36 are for the most part classified but include range, accuracy and a high probability of location. Automation of the AN/TPQ-36 will provide greater capabilities than provided by the AN/MPQ-4A in three significant areas: width of sector, speed of location and location of weapons firing simultaneously from different positions.

The AN/TPQ-36 will scan a sector over three times that of the AN/MPQ-4A — a sector that recent tests have shown is beyond the capability of an operator using a manual radar.

Since the threat facing a mortar locating radar is highly mobile, the radar itself must likewise be highly mobile and capable of locating the threat with great speed. Automation provides the speed of location and the radar is being designed to become operational within 15 minutes and to displace in five minutes.

Such rapid emplacement and displacement will be achieved by a compact configuration of the radar system. The antenna, which operationally will be only 12 feet high (less than the AN/MPQ-4A), is transported on a  $\frac{3}{4}$ -ton trailer which is pulled by an M561 Gama Goat. In the bed of the Gama Goat is the S250 operations shelter, containing the operator's console and most of the computational capability of the system. Thus the entire system will be contained on a single vehicle with trailer, and the two major components are easily lifted by CH47 helicopters.

Engineering development of the AN/TPQ-36 was initiated in October 1973 with a contract to Hughes Aircraft Company. The first of the five models to be delivered will undergo live fire testing during the summer of 1975. Delivery of the remaining models will provide for development and operational testing

through early 1976. Low rate initial production will provide an operational capability by 1979.

### **Tactical Employment**

Operationally, the AN/TPQ-36 Mortar Locating Radar and the AN/TPQ-37 Artillery Locating Radar will be complementary. Deployed within two to four km of the front lines and highly mobile, the AN/TPQ-36 will quickly locate enemy mortars, providing the locations to the colocated direct support artillery battalion for immediate counterfire: three radars will be deployed in each division sector.

The AN/TPQ-37 will be deployed much further back in the division sector and focused on the location of longer range artillery, with the potential of censoring out all returns from shorter range mortars in order to concentrate on the artillery threat. The greater capability of the AN/TPQ-37 may allow for the use of only two artillery locating radars in each division sector, with increased protection provided by the greater distance from the front lines.

Technically, both the AN/TPQ-36 and AN/TPQ-37 radars are similar in operation. Each radar continuously scans the radar horizon. Combining the advantages of automation and an antenna that searches by electronically shifting the focus of the antenna, the radars are able to place each beam just above the radar crest, rather than in a horizontal line above the highest terrain as is the case of mechanically scanning antennas. This terrain-following capability insures the detection of projectiles at the earliest possible time and avoids loss of flat or low trajectory projectiles.

### **Design Development**

The similarity of technical requirements for the two radars provides for a number of common approaches in managing the development. A single project manager was established for both radars; both are being designed to meet specified unit production prices; and some parallel effort is being conducted to provide improved capabilities for both.

The Design to Unit Production Cost (DTUPC) concept was implemented by the Army and the Department of Defense in 1972, at about the time the contract for development of the AN/TPQ-37 was awarded. As a result, the AN/TPQ-37 is one of the lead development programs incorporating a contractual provision that the contractor will design to meet not only operational and technical specifications, but also will insure during his design that production cost aspects are considered to limit the procurement and life cycle costs of the system.

Early experience with the AN/TPQ-37 and the DTUPC lessons learned during that development program provided experience factors that were incorporated into the development of the AN/TPQ-36 Mortar Locating Radar initiated 16 months later. As a result, the AN/TPQ-36 contract contains a unique DTUPC concept in which the first of the five models will be built and tested prior to design freeze on the final four models. Such phased development allows the advantage of hindsight to be incorporated into the development,

providing for redesign and incorporation of greater producibility into the remaining development models and the production systems. This first-of-a-kind concept provides promise of achieving a carefully defined unit production price of less than \$600,000, less than half of the anticipated production cost of the more sophisticated AN/TPQ-37.

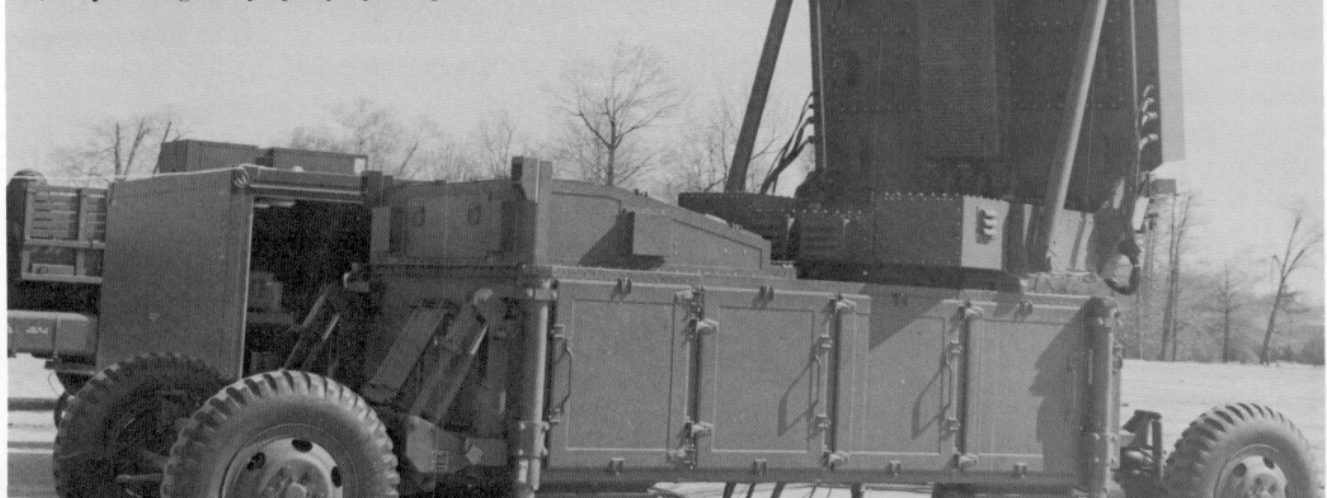
### Automatic Operation

The complete automation in both radar systems provides for automatic location of weapons without operator action with one exception: the operator must perform the steps of successive approximation to correct the altitude of the location pinpointed by the radar. Without the necessity for such altitude correction, the radar can actually locate the origin of a projectile within a matter of seconds — possibly before the round has landed. Correction of altitude adds as much as a minute to the time of location.

Recent information from the Defense Mapping Agency has revealed the potential availability of topographical map information in digital format, suitable for input into and use by computers. With such information in the radar itself, there is the potential for complete automation of all steps leading to location within seconds of firing and requiring an operator only to monitor system performance and provide a human interface with the weapon locations determined by the radar. The feasibility of such complete automation is being examined in parallel with the two radar development programs. If the feasibility is indicated, a demonstration is planned during 1975 in conjunction with the AN/TPQ-37 development tests.

Even without automatic height correction, the automation provided by these two new radars provides great potential for reduction in manpower requirements. The crew of the current mortar locating radar, AN/MPQ-4A, consists of nine men, including a radar warrant officer. Crew for the AN/TPQ-36 should be between five and eight men, with automation and human factors engineering keyed to acceptability of the lower number. The AN/TPQ-37 radar crew size will be eight to 12, including a radar warrant officer, with maximum automation again indicating a crew size at the bottom of this range. Extensive built-in test equipment in both radars will provide for automatic system monitoring and fault isolation, minimizing the skill level required for organizational maintenance, while maximizing the extent of repairs that can be performed at the organizational level. The mean time to repair each of the radars is expected to be 30 minutes at the organizational level.

AN/TPQ-37 designed by Sperry Gyroscope.



### Human Factors

Considerations of human factors engineering — the user viewpoint — have received maximum emphasis throughout the development of both radars, providing further potential for minimizing crew size. A project advisory group, which includes members representing the user and trainer at TRADOC, the user at FORSCOM and the testers at AMC's Test Command and the Operational Test and Evaluation Agency, frequently reviews the status of both programs. Membership from DA and other interested agencies has insured the incorporation of viewpoints from all perspectives during the development program.

This participatory management philosophy has also resulted in specific design reviews by radar warrant officers and noncommissioned officers early in the development cycle of both radars. For example, within months after the contract for the AN/TPQ-36 was awarded, a select group of experienced NCOs and warrant officers reviewed plans for the configuration of the radar system. Working with a mock-up of the operations shelter, the group placed components within the shelter at locations with the greatest utility to assure system operation by a single crewman.

Parallel development of the AN/TPQ-36 and AN/TPQ-37, with the latter under the concept of expedited development, will provide a new capability to the field Army, enhancing survivability of the US soldier on the battlefield, beginning in 1979 to 1980 when initial production models of both systems will have completed final testing prior to issue to using units.

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# REDLEG Newsletter

**T**he Officer Personnel Directorate (OPD), HQ MILPERCEN, will undergo a major reorganization during the period July-September 1975. The organizational realignment is being made to better provide for the professional development and utilization of officers under the Officer Personnel Management System (OPMS).

Under OPMS, officers will be managed by OPMS specialties and grade. The new OPD organizational structure reflects this change. It is important to note that while the reorganization in no way modifies the current Branches of the Army as established by Title 10 of the US Code, the major impact of the OPD reorganization does occur at the career branch level.

By next fall, all field grade officers will be managed within divisions based on respective grades. Like Army colonels, all majors and lieutenant colonels—regardless of their branch identification—will be managed by specialties within the new Majors and Lieutenant Colonels Divisions, respectively. Within the three field grade divisions there will be a Professional Development Branch, a Support Branch and multiple specialty management elements.

Specialty managers throughout each field grade division will be responsible for the professional development and assignment of individual officers. This means that a lieutenant colonel with field artillery as his primary specialty would direct all his requests for information and assistance to the Lieutenant Colonels Division's Field Artillery Specialty Manager. A field artillery lieutenant colonel with information as his primary specialty would deal with the Information Specialty Manager in the Lieutenant Colonels Division. The individual field grade officer normally will look first to his primary specialty manager for guidance, assistance and professional development advice; however, he is not precluded from seeking guidance from his alternate specialty manager.

In examining the role of the career branches under OPMS, it was determined that management of company grade officers by specialty and grade within the current branch framework would be desirable, providing these officers with a sense of organizational identity and pride. Therefore, these familiar career branches will be retained under the auspices of three new company grade divisions: the Combat Arms, Combat Support Arms and Combat Service Support Divisions. The branch chiefs within each of the three divisions will be lieutenant colonels. Each division will contain professional development branches to insure continuity of officer development throughout the company grades.

Creation of a new Warrant Officers Division will centralize the management of all warrant officers within one element. Today only aviation warrant officers are managed centrally within a single branch. Formation of this division offers distinct advantages since the problems associated with managing warrant officers are somewhat different from those encountered in managing commissioned officers.

In summary, OPD will be reorganized into seven divisions: three field grade, three company grade and a warrant officer division. Field grade officers with field artillery as their primary specialty will look to the Field Artillery specialty manager in the respective division (COL, LTC or MAJ) for guidance, assistance and professional development advice. Company grade officers with field artillery as their primary

specialty will look to the Field Artillery Branch of the Company Grade Combat Arms Division. All warrant officers will be managed by the Warrant Officer Division. The reorganization of OPD is being carefully managed to insure a smooth transition from the current branch and grade system to a specialty and grade system.

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**M**any officers have questions about how seniority is established, particularly with respect to promotion status. This is not surprising since the rules are complex. The following information will help clarify the issue.

- **Temporary Promotions:** When a promotion board meets to consider officers for temporary (AUS) promotion, those officers selected are assigned sequence numbers in the following order:

- a) Earliest Temporary Date of Rank (TDOR).
- b) When officers have the same TDOR, ranking is by total Active Federal Commissioned Service (AFCS).
- c) When officers have the same AFCS, Regular officers are ranked ahead of Reserve officers.
- d) Regular officers are ranked in order of their sequence number for Regular Army promotion.
- e) Reserve officers are ranked by age.

- **Regular Army Promotion List Sequence:** Regular Army officers are assigned promotion sequence numbers based on their Regular Army date of rank. These sequence numbers are published in the Army Register. Since all USMA graduates and all Regular Army ROTC officers who enter active duty in May and June each year have the same date of rank (graduating date of the USMA class), ties are frequent.

When such ties occur, rank is established as follows:

- a) USMA graduates rank first in order of class standing (General Order of Merit).
- b) Other officers are then ranked in order of the date of acceptance of RA appointment.
- c) Ties in appointment dates are resolved in favor of officers with the most AFCS, then total commissioned service.
- d) Ties in commissioned service are resolved in favor of the oldest officer and the remaining ties are ranked alphabetically.

- **Errors in Regular Army Promotion Sequence Numbers:** If you entered active duty in Fiscal Year 1969 through 1973, it is possible that your promotion list sequence number, as published in the "Army Register," is incorrect. Some officers in this category were incorrectly ranked in alphabetical order when sequence numbers were assigned. This data is now being corrected and the next "Army Register" will show the correct sequence numbers.

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**K**eepp those photos coming! AR 640-30 spells out the requirement. A recent change to the AR requires photos upon promotion to first lieutenant! It's the responsibility of each officer to insure there is a current photograph in his official (PARD) and Branch file. To be current, a photo must not be over four years old. DA Selection Boards do look at your photo (or wonder why there's not one)! Does yours portray the best image?

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**F**ield artillerymen in the DC area will celebrate the glorious 200th birthday of the Field Artillery with a ball at Bolling Air Force Base, Washington, DC, on 15 November 1975. Mark your calenders now!



# HISTORICAL PRECEDENT

**W**e often hear that today's conventional battlefield, as exemplified by the 1973 Yom Kippur War, is a new ball game in terms of tactics, destructive power and loss rates. To a considerable degree, this is true and our tank-infantry tactics are being revised to optimize weapons capabilities while minimizing vulnerability against a sophisticated enemy superior in numbers of men and weapons. However, there is much to be learned from WWII about today's more lethal battlefield. Numerous examples from that war provide clues to the outcome of a clash in Europe.

The German situations in North Africa in 1943, in Russia in 1943-44 and in France in 1944 were similar in many respects to the USAREUR situation today. That is, they were outnumbered in both men and materiel one

round fired by the Germans. On the northern sector alone, he had 700 light field artillery pieces and 540 medium and heavy pieces. According to Rommel, "a tornado of artillery fire tore our position apart." Due to their ammunition shortage the Germans did not immediately fire a counter-preparation, a decision Rommel described as "a terrible mistake." The limited stocks of ammunition also prohibited the Germans from massing artillery fire. German counterattacks were broken repeatedly by massive air attacks and artillery fire. Entire Italian formations (straight infantry) "disintegrated under a tornado of fire."

When Rommel assumed command on the Atlantic Wall in France he promptly began a one year program to emplace some 20 million mines, four million of which

## *FOR TODAY'S*

(especially tanks, artillery and aircraft), and were at the end of a long supply line much the same as we would be in a war with the Soviet Union. It is clear that victory in these circumstances requires responsive, massive use of firepower to redress the numerical imbalance. A study of Rommel's Africa campaigns, the Normandy Invasion and the German defeat on the Eastern Front can be very instructive.

In Rommel's offensive across North Africa the British losses between 26 May and 20 July 1942 included 75,000 troops, 2,000 tanks and thousands of other vehicles. Yet by 20 July, Rommel had lost the war of attrition because he fought the entire offensive with the same formations and ended up at the end of a long supply line without adequate fuel and ammunition.

In the Battle of El Alamein, Montgomery enjoyed air superiority, flying 800 bomber and 2,500 fighter sorties a day and once put 1,300 tons of bombs on one narrow division sector. He also enjoyed a large superiority in number of FA pieces which fired 500 rounds to every were

on the beaches by 6 June 1944. At Normandy on D-Day, however, there were over 10,000 allied air sorties and 640 naval guns supported the offensive which, Rommel said, "had such immense effect that no significant tactical operation was possible."

At St Lo on 25 July 1944, 1,600 Allied bombers carpet-bombed the Panzer Lehr sector for three hours. Then the field artillery began a "murderous drum fire." Units were wiped out, virtually every major piece of equipment was smashed, tanks were turned upside down and infantry was buried in position. The entire area "resembled a moonscape." All communication was obliterated.

At Stalingrad, 10 January 1943, 7,000 Russian cannon began a preparation on a seven mile front which lasted more than two hours and shattered the German lines like an egg shell. Along with the artillery came clouds of Soviet planes attacking at low level. Entire units were wiped out. Mobs of crazed soldiers ran to and fro, hysterical and bleeding from nose, ears and mouth.

# MODERN BATTLEFIELD

by COL Paul F. Pearson

## M7 howitzers shell German positions in December 1944.



Soviet tanks and mounted infantry poured through the gaps. The 44th, 376th and 384th German divisions vanished under a "torrent of fire and steel." The Russians were so well supplied with ammunition that they fired antitank rounds at individual German soldiers. The northern and eastern horizons were filled with Russian T-34 tanks and antitank guns that poured a stream of projectiles at the Germans. On the other hand, a German sergeant who killed five Russian tanks with fifteen 75-mm antitank gun shells was reprimanded for wasting precious ammunition.

In WWII successful generals in all armies were those who thought BIG. A few combined the ability to manage great masses of men and materiel with audacity and decisiveness to achieve true greatness. Again we return to Rommel. He enjoyed amazing success not only because his tactics reflected his logical and imaginative mind, but also because he never held back. When the opportunity arose for decisive action he poured it on, using every soldier, weapon and logistic asset available. On the other side, the Russians, British and Americans inundated the Germans with massive, overwhelming assaults of air, artillery and armor.

It is time again for the US Army to begin thinking BIG—after the years of high-level supervision of platoon-level actions in Vietnam in a passive air and artillery threat environment. In addition, commanders in recent years have been immersed in cost-cutting, logistical constraints and managing shortages. Rommel's dictums which seem appropriate to the modern battlefield are:

- In mobile warfare the commander must adapt and reorient himself daily, even hourly.
- Maneuver forces must have mobility, otherwise they are a liability (foot infantry).
- Supplies are the fundamental premise of battle.

Quartermasters tend to work by theory and be satisfied

if their performance comes up to precedent. The commander must be ruthless in his demand for all-out effort.

- Speed of maneuver and quick reaction in command are decisive. To be satisfied with norms is fatal. The action goes to the side which plasters the opponent first.

- Curtain flanks with artillery fire in a fast-moving situation. Use smoke to screen off dangerous areas. Feint with artillery.

- Artillery must have great range, great mobility and carry with it ammunition in large quantities.

Rommel suggested these tactics against the Russians (after the Germans were in a position where force ratios and logistics no longer permitted them to slug it out): Manufacture hundreds of thousands of relatively inexpensive antitank guns. Install infantry with antitank guns in *deep* minefields several kilometers deep. The Russians will bog down. Trade AT guns for tanks. "Our last chance in the East lies in equipping our Army for an unyielding defense. Fire power must be increased. Victory can no longer be gained by mobile warfare because of German inferiority in logistics."

### Major Factors in German Defeats

*Logistics* was the decisive factor in every case. German tactical genius could not make up for grossly inadequate fuel and ammunition supply. All of the succeeding factors have major logistical implications.

*Air superiority* was a critical element. When the Germans lost air superiority they lost freedom of action, resupply was drastically curtailed and massive losses were sustained to enemy bombing and close air support. Considering the Soviet counterfire capability, are we sure that our ADA will keep hordes of Soviet aircraft off our backs?

*Field artillery* was used against the Germans in enormous quantities by all the Allies in every theater. Ammunition expenditures were far beyond the level that seems probable for NATO forces today. A study of WWII reminds one that FA is not yet a precision instrument. Over the past 30 years FA has conducted a heavy romance with accuracy, to the point that we have believed a great deal of our own propaganda about the surgical precision of FA. This is a dangerous and misleading concept. The FA is not yet accurate enough to fire for effect on the first round in most situations. For the next five to 10 years we will not be a great deal more accurate than we were in WWII. Therefore, FA tactics and gunnery techniques must deal with the fact that, for most targets, relatively large amounts of ammunition will be required to obtain significant effect. In most situations, the desired effect on the target in a European situation will require several battalion volleys, not a platoon or battery volley.

*Mine warfare* was used extensively, on a scale that current tactical thinking doesn't approach. Opponents quickly put down hundreds of thousands of mines in every theater.

*Losses* on both sides were enormous. The Germans, unable to keep pouring in replacements of men and materiel, were eventually steamrolled in spite of frequently superior generalship and tactics.

## The Modern Battlefield

It seems logical that war in Europe today would resemble these WWII experiences to a considerable degree. The US Army's rapidly developing modern battlefield concepts, designed to meet the Soviet threat, are as exciting as they are needed. Initial emphasis has been placed on "how to fight" in terms of maneuver and fire support tactics and techniques. TRADOC training circulars are beginning to flow to the field with this new doctrine. With this part of our modernization process under way, it is time to look carefully at those less glamorous but absolutely essential elements of warfare which insure that well-trained tactical units are able to achieve the necessary exchange ratios of 5, 10 or 20 to 1. We must have a logistical system which can provide the tonnages required for massive delivery of all types of firepower: air delivered, tank, ADA and field artillery as well as small arms, antitank and mines.

There must be free-flowing supply lines and depth in terms of replacement units and materiel. Commanders must think BIG in terms of the firepower and logistics which are required, along with tactical genius, to redress numerical inferiority. ❌

**COL Paul F. Pearson, FA, is Director of the Gunnery Department, USAFAS, Fort Sill, OK.**



(Continued from page 5)

contact with active operations of the Army, let alone the field artillery, that I am afraid that I would fail to appreciate the value of the various technical and informative articles should I subscribe.

I have two unusual bits of service which have been especially remembered over the years.

First: Service with the "Hamilton Battery." In May 1913, after three years service with Battery A, 1st FA, in the Philippines, I joined Battery D, 5th FA, then stationed at Ft. Snelling, MN, and served with it until August the following year. From 20 December 1913 to 1 February 1914, I was the only officer on duty with the battery, hence was its commanding officer. The battery had but recently been changed from a 3-inch battery to a 6-inch howitzer battery with the corresponding increase in personnel and animals. It was a busy time.

Second: I became secretary-treasurer

of the Field Artillery Association and editor of the *Field Artillery Journal*.

When WWI was declared, the Field Artillery was in process of expansion in accordance with Congressional action of 1916 which authorized many new regiments over a period of several years. The organization of the remaining regiments was immediately authorized. This required all possible officers. By late summer 1917, all field artillery officers on duty in Washington were gone to the field, with the exception of two, CPT Everett S. Hughes and myself. Both of us were serving, by detail, in the Ordnance Department and on duty in the office of the Chief of Ordnance. CPT Clarence Deems, with other duties, was serving as secretary-treasurer of the Field Artillery Association and editor of the *Field Artillery Journal* and was among those relieved for field duty. He requested me to take over his duties with the association. I agreed and without formal approval of the Board of Directors, I became secretary-treasurer of the association and editor of the *Journal*. Fortunately for me, in Mr. West, there

was a most able assistant who cared for the business of the association and saw to the mechanics of publication.

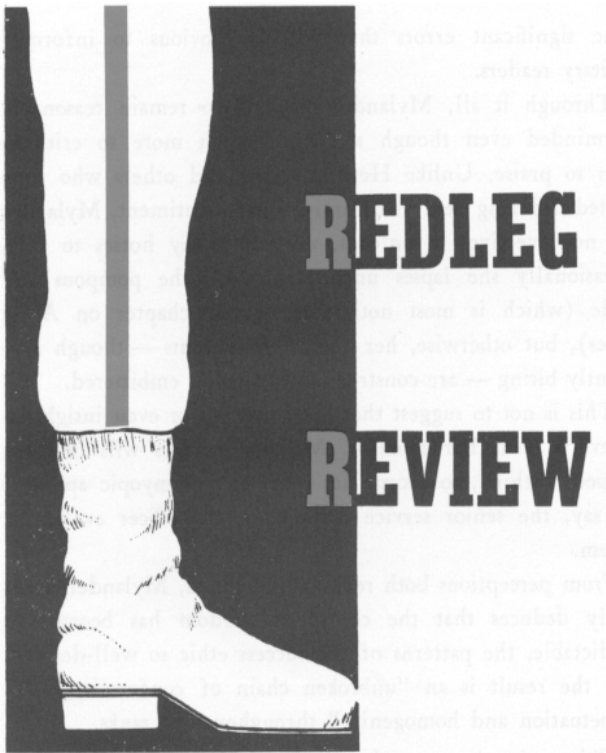
I was editor for but a single issue of the *Journal*.

It was difficult for me to carry on my duties as an ordnance officer and to try to put out a proper *Journal*. When General Snow came to Washington as Chief of Field Artillery, I appealed for relief. Shortly, his office found a retired FA officer able and willing to perform those duties and on 19 February 1918, I turned them over to MAJ (Ret) A. F. Cassels.

I still have the transfer papers and will be glad to send them to you if they are desired as part of the association records:

Claude B. Thummel  
COL, US Army (Ret)  
Manhattan, KS

*We would very much appreciate having the papers and are happy to report that the **Journal** is alive, well and very much in business, as is the 5th Field Artillery.—Ed.*



THE PICTORIAL FIELDBOOK OF THE REVOLUTION, by Benson J. Lossing, reprint of 1859 edition by Charles E. Tuttle Company, Rutland, VT, 1972, two volumes, \$25.

Benson J. Lossing was born in southern New York in 1812 and lived his life there and in eastern Connecticut. His two-volume work has been reprinted by the Charles E. Tuttle Company.

The value of the reprint is obviously in conjunction with the bicentennial interest now being generated. Lossing's work is no doubt a valuable one deserving reprint. This one was done in Tokyo, and the excellent quality of the paper and cover is matched by the clarity and sharpness of the typeset. The more than 1,500 pages of the two volumes come in an attractive but cheaply made cardboard box.

The original edition came out complete in 1859 and a word of explanation is in order about the man and the historical writing of the period in order to judge its present merit.

Lossing, as all other historians who wrote in the mid-19th Century, did not claim the profession of historian, but rather looked upon it as an avocation. His best works are historical, but the majority of the 40 titles he produced dealt with popular subjects for the general public. Lossing was self-educated and by the age of 22 was an editor of a small New York paper. A few years later he moved to New York City and became a wood engraver working for popular magazines for some 10 years.

In 1848, he conceived the idea of a narrative sketch book of the Revolution and for five years, sponsored by a New York City publishing house, he traveled over 8,000

miles making sketches and interviewing people who were "authorities" about the war period. His pen and ink sketches, of which there are over a thousand, vary greatly in size but they all attempt to add to the text and the reader's knowledge. There are maps, sketches of houses, lottery tickets and continental money. This was a distinct advantage for a book before the days of photography.

Most works produced were biographies, local histories or monographs on some popular subject such as the Revolutionary War. Lossing's work was less ambitious than Bancroft's 10-volume history of the United States which was produced between 1834 and 1875, but Lossing had preceded this work with a three-volume *Life of Washington* in 1830 and an effort in the cultural or intellectual field with *Outline History of the Fine Arts* in 1840.

Lossing's idea was original, bold and well carried out. There are copious footnotes amounting to a good third of the page in many cases, including facts that can be found nowhere else. Lossing wrote at a time when the "Washington chopping down the cherry tree" type of history was passing and an honest attempt to recreate the past was beginning. There is unmistakably the theme of Americans being God's "chosen people" and a glorification of the morality and purity of America as seen by men of this period. Being a product of the times was, no doubt, good for sales but it also was an unconscious honest emotion of the writer.

There is little if any attempt to ascribe political, economic, social, intellectual or artistic causes as the reasons events happened. There is more an emphasis of progress made up of democracy, Puritan piety and a mysterious, undefinable spirit or character of the American society built around the belief Mr. Jefferson expressed that the government that governed least governed best. There is no emphasis of making all Americans good and all British, plus Arnold, bad. Lossing is more objective than most writers of the period when it comes to stereotyping people. The progress or change that the American people were going through was understood to be for the best and progress was never questioned.

The second volume carries an excellent 90-page index which is invaluable in the absence of any table of contents or chronological order to the work. Because Lossing is writing out of love for his subject he takes the liberty to wander far afield at times. The other main drawbacks to the work are that he is interviewing people 65 to 70 years after the event and recollections do become dulled in that time period. Also, the unusual format of narrating events in a geographical area, no matter the time date, lends to an unorganized flow of the period covered. The footnotes indicate that he not only depended on interviews but also covered about all the printed material on the subject and some manuscript material as well. At the end of the text of volume two, before the index, there is a 70-page supplement that has a wealth of topical

information on such areas as lotteries, diplomacy, prisons and the origin and words of the song, "Yankee Doodle." In fact, this supplement covers the period from the Stamp Act through the Constitution which is a noble attempt to put the Revolution in proper perspective and an understandable time frame.

The work is a must for every college library and even though the price might hold back some individual buyers, it would be a welcome and valuable addition to the library of anyone who claims an interest in the Revolution.

*CPT Lynn L. Sims, FA, USAR, is a historian at the Command and General Staff College.*

**THE GENERALS: MAKING IT, MILITARY-STYLE,** by Maureen Mylander, The Dial Press, New York, 1974, 397 pages, \$10.

In *The Generals*, Maureen Mylander — out to tweak the lapsing conscience of a society which habitually exhibits little more than tepid concern for the abiding principle of civilian control and support of the military — seeks to penetrate the longstanding anonymity of those individuals occupying the highest levels of Army leadership.

The author's well-intentioned, extensively documented and surprisingly frank delineation of who the Army's generals are and how and why they think and act as they do extends much further, however.

The fact is, Mylander has served up a comprehensive, highly topical appraisal of the military success ethic that's bound to provoke more concern and reflective discussion in officer circles than among civilian readers for whom it's actually intended.

To Mylander, generalship — the ultimate manifestation of the military success ethic — is nothing more than patterned professionalism which the Army has institutionalized and reinforced with peer pressure over the years. "In contending that everybody has a chance to become a general and forcing others to strive, even though few will ever succeed," she writes in the preface, "the Army maintains its most necessary illusion."

This basic theme permeates the first two sections of the book, "Making It" and "Stardom," where Mylander's zealous discipline as an investigative free-lancer is most apparent. Resorting to personal interviews with 250 field grade and general officers, copious notes from 3,100 pages of transcripts from the Army War College's Senior Debriefing Program and personal data extracted from DA-approved career resumes of 491 Army generals as source materials, she devotes nearly 300 pages to familiar aspects of the officer career system — everything from the effects of "grade gallop" and lockstepping assignment patterns to pecking orders and protégés.

Highly anecdotal, Mylander's reportage throughout these two sections is a good read despite occasional oversights and some significant errors that will be obvious

to informed military readers.

Through it all, Mylander manages to remain reasonably fairminded even though she finds much more to criticize than to praise. Unlike Herbert, King and others who have vented differing degrees of anti-military sentiment, Mylander has no invectives to unleash, no real hobby horses to ride. Occasionally she lapses unpardonably to the pompous and snide (which is most noticeable in her chapter on Army wives), but otherwise, her critical sentiments — though frequently biting — are constructive and never embittered.

This is not to suggest that she is correct or even insightful at every turn. Far from it. Military readers will be hard pressed, I think, to accept her sobering yet myopic appraisal of, say, the senior service colleges or the officer evaluation system.

From perceptions both real and imagined, Mylander eventually deduces that the course to stardom has become so predictable, the patterns of the success ethic so well-defined, that the result is an "unbroken chain of conformity, self-perpetuation and homogeneity" throughout the ranks.

This notion becomes the focal point of the book's third, and no doubt weakest, section — "Tomorrow's Generals." Here Mylander contends that "independent thinkers and young idealists are being driven from the Army, leaving the field to conscious status-quo men, who, by definition, will become tomorrow's generals." Since these men will not be inclined to challenge a career system that's led to stardom for them, the author argues that the current military success ethic can only be changed by introducing reform-minded nonconformists throughout the top Army grades.

Mylander feels this could be accomplished in part by revising evaluation reports to include peer ratings, abolishing below-the-zone promotions and issuing appropriate instructions to selection boards to choose qualified officers who have "dared to be different."

She also advocates revising the ratio of generals to the total officer strength without cutting back the current number of star billets: "If generalcy becomes a reward for reformers, the Army must have the stars to confer. And if change occurs, the Army will need its generals to lead and carry out the revolution, and to give lower-ranking officers the incentive to cooperate. Conversely, an Army without its main lure for for keeping officers in service will sink only deeper into decline."

All told, Mylander's propositions and attendant recommendations are disappointing. And while military readers are apt to judge them quasi-remedial at best, this should not make *The Generals* any less deserving of our attention. This is a book concerned professionals can't afford to overlook.

*CPT David R. Fabian, AG, is Information Officer, US Army Military Personnel Center, Alexandria, VA.*

# *a word from the editor*

*(Continued from page 2)*

War and another of our extracts from the Field Artillery in Vietnam Monograph.

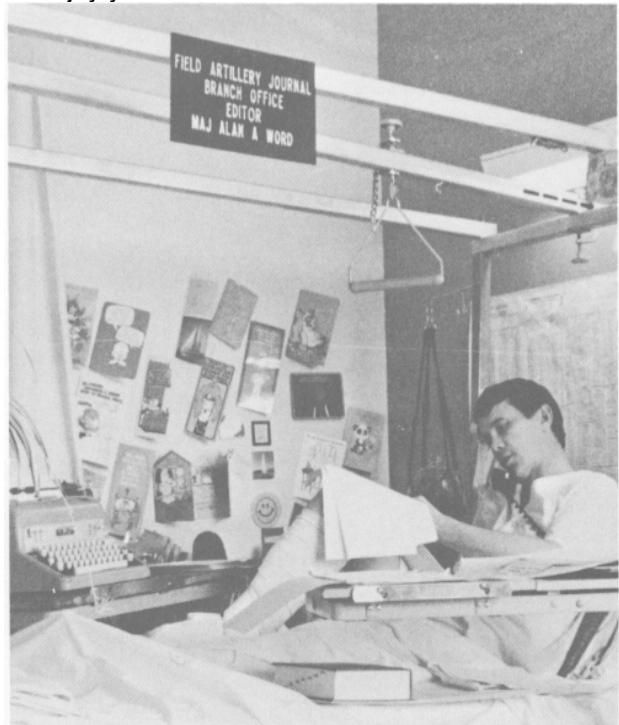
Two very familiar names are missing from our masthead this month. First Lieutenant Dave Compton, who has been the assistant editor as long as any of us can remember, is headed to Germany to join the 56th Brigade. Dave became the second person to join the staff when the *Journal* was just a gleam in our eyes. A good deal of the credit for the rebirth of our publication goes to Dave and we all wish him Godspeed. Our staff artist and "art department," Carl "Sam" Ewing has left to join the local Training Aids Services Office (TASO) down the street, so he is still with us in spirit if not in body. His illustrations in each issue since March of 1974 have greatly enhanced the *Journal*. On the subject of art, the illustrations and the majority of our covers are now being done by the very talented crew at TASO headed by Bob Feitz. We think that you will agree with us that they are doing excellent work.

Finally, we want to welcome a new member to our staff, 2LT Dave Long, fresh from the Armor School at Fort Knox, KY. We expect Dave to be a real asset to our staff and should ably assist us in understanding, coordinating and communicating with the sister combat arms.

A good deal of the credit for the publication of this issue must go to the excellent medical personnel and

staff of Reynolds Army Hospital here at Fort Sill. Although your editor was unexpectedly hospitalized throughout January and February, we were able to continue with our publication schedule thanks to individuals like Mr. Fred Roloff and all of his people on the Orthopedic Ward. Through their kind assistance, they enabled us to establish and maintain our "branch office" (see picture). Artillerymen recognize and appreciate expertise. From our rather extensive observations, the personnel at Reynolds Army are truly professionals in every sense of the word. Credit is also due the rest of the *Journal* staff who "fell out one" smartly and took up the slack.

Enjoy your *Journal*!



# *editor*