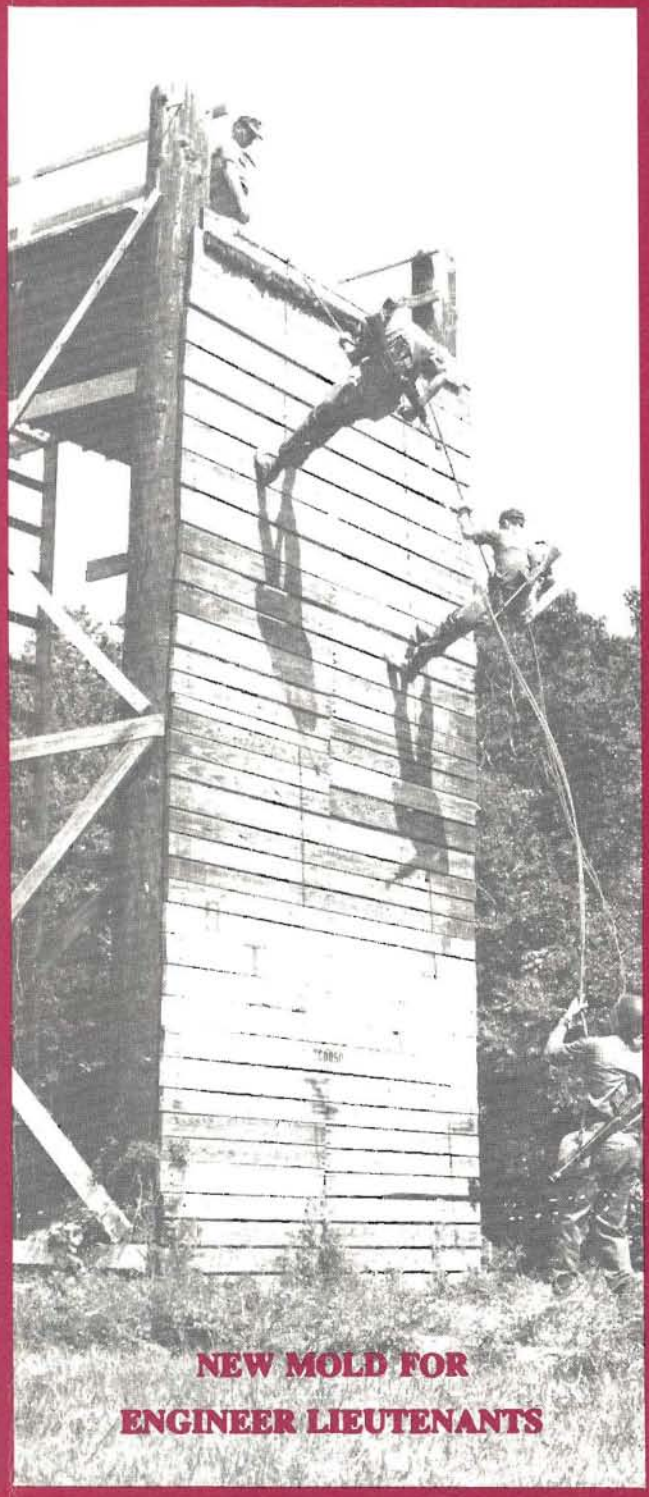
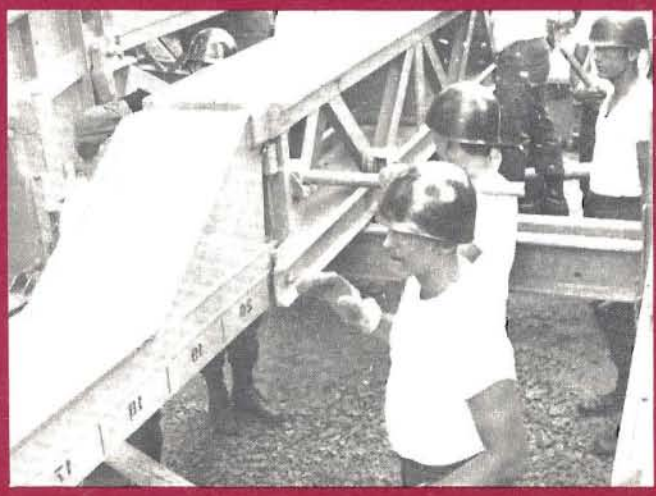
engineer

SPRING 1980



NEW MOLD FOR
ENGINEER LIEUTENANTS



UNITED STATES ARMY ENGINEER CENTER AND FORT BELVOIR

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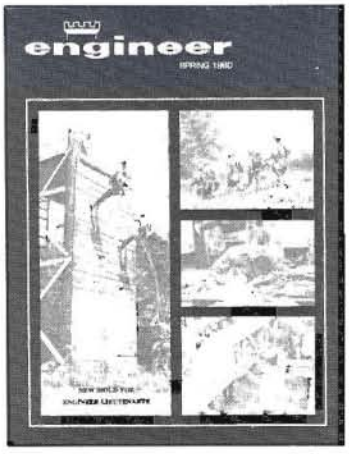
THE COVER

Improvements in the Engineer Officer Basic Course have resulted in the best trained engineer lieutenants in history. SP4 Jim Eady, SP5 Lynn Gilderhus, and Oscar Gatlin, Jr., shot the cover photos of EOBC activities. See page 6 for the full story.



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DEPARTMENTS

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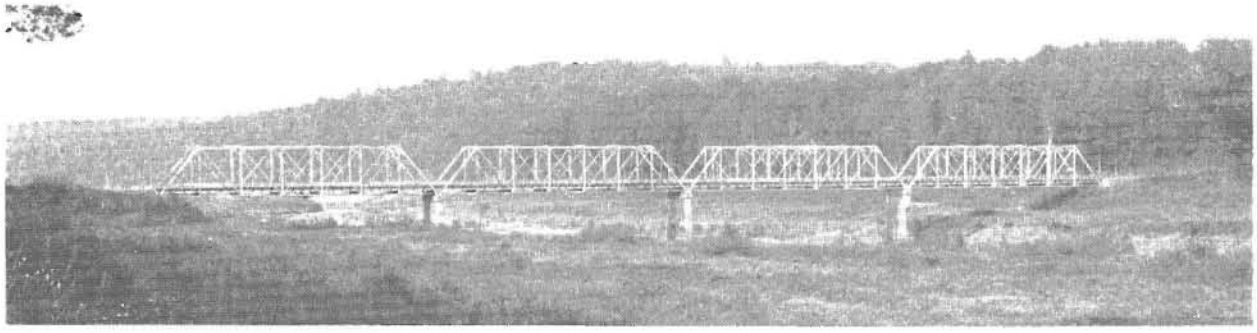
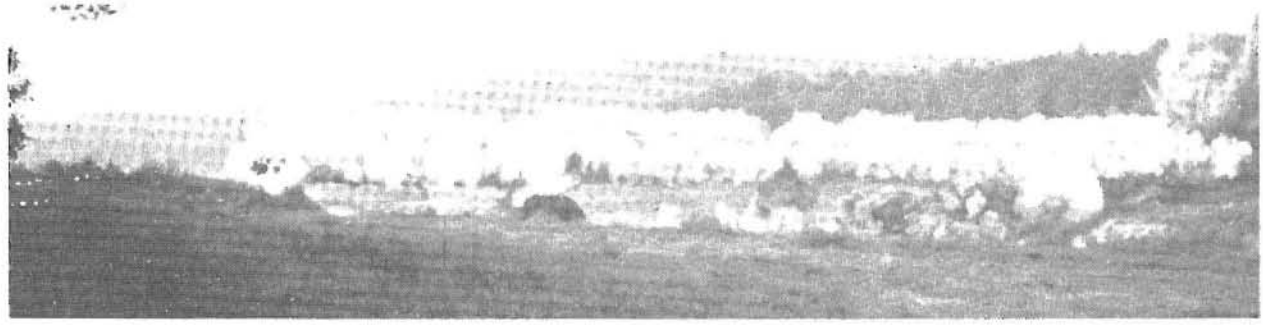


Personnel from three engineer battalions at Fort Bragg, N.C.—the 27th, 307th, and 548th—recently demolished five highway bridges located within the B. Everett Jordan Reservoir area that is scheduled for impoundment in the Wilmingon, N.C. Corps of Engineers District. Each bridge was on a secondary road that had been relocated and closed to public traffic in preparation for the impoundment. The demolitions exercise exposed the Wilmington Civil Works staff to a military operation and, at the same time, provided troops with realistic training.

UP IN SMOKE



TOPO LAB SUPPORTS MX MISSILE

The latest members of the Corps of Engineers family to join in support of the MX Missile Program are geodesists and engineers at the Engineer Topographic Laboratories (ETL). Their job for the next six years will be to develop the precise survey technology needed to pinpoint the network of 4,600 missile shelters. ETL has been tasked by the Corps and the Defense Mapping Agency to increase the precision of existing inertial surveying systems and eventually to produce a new system that will be more accurate than any now available. The immediate task is to test and perhaps modify the automated equipment for land surveys that has been used by some Corps divisions and districts as well as by the Defense Mapping Agency.

B/76 MOVES TO FORT DRUM

Company B, 76th Engineer Battalion (CH) will permanently transfer from Fort Meade, MD, to Fort Drum, N.Y., in April. Fort Drum has a requirement for increased engineer effort to enhance the readiness and quality of life of the large number of soldiers and units that train there. The Army announced last year that an engineer battalion will be permanently stationed at Fort Drum during the next three years. Company B is the first company to be stationed there. The remaining companies necessary to complete a battalion will be selected later. Company B's authorized strength is 194. In mid-January, the assigned strength was 135.

RECRUITER DRAFT SET

Approximately 1,000 soldiers will be selected for *involuntary* recruiting duty by the end of March to help meet FY 80 recruiting goals, according to DA officials. A test of involuntary recruiting assignments was conducted during FY 79 for about 500 NCOs selected from CONUS posts. The program was expended to overseas commands for FY 80 and involves shorter overseas tours for some soldiers. For the present, soldiers in the following MOS are not being selected: 05H, 11H, 13F, 16R, 27F, 31E, 31S, 35M, 45K, 97B, and 98C. This list, however, is subject to change without prior notice.

BATTALION MASCOT

The 11th Engineer Battalion, which has worn a black panther unit crest for more than 50 years, officially adopted a real black panther as its mascot during recent ceremonies at Fort Belvoir, VA. A representative of the National Zoo, where the two-year-old female cat will remain, accepted official orders and dog tags during the ceremonies. The cat's name is Naki, which means "destroyer" in one African dialect.

PEOPLE

The first engineer officer to be slected for promotion to temporary brigadier general from a facilities engineering slot is *COL Mark J. Sisinyak*. Four other engineer officers were also selected for the BG List, including *COL Richard S. Kem, COL Donald R. Morelli, COL Donald M. O'Shei,* and *COL George W. Withers, Jr. . . . . Dr. James Chormokos, Jr.*, is the new chief of the Research and Development Office, U.S. Corps of Engineers . . . . . *Loyd A. Duscha* is the new chief of the Engineering Division, Civil Works Directorate, OCE.

1980 ENGINEER DIRECTORY

The 1980 Corps of Engineers Officer and Warrant Officer Directory is now available through the Main Post Exchange at Fort Belvoir, VA. The price is $1.60 per copy. The Directory includes the names and addresses of all Primary and Alternate Specialty 21 officers and those officers with a control branch of Engineers. It also includes warrant officers with a primary/alternate specialty of 621A, 811A, 821A, 833A, and 310A.

NBC OLYMPICS

Contestants race against time to treat a "victim" on the reaction course during the 2nd Annual NBC Olympics hosted by the 7th Engineer Brigade in Kornwestheim, Germany. The 237th Engineer Battalion won the reaction course competition, but the 9th Engineer Battalion took top unit honors by placing first, second, or third in each of five events. Other events included the free-style decontamination contest, the one kilometer relay, the 800-meter run, and volleyball. The purpose of the NBC Olympics is to focus attention on nuclear, biological, and chemical training, and to increase unit readiness. (Photo by PVT Winston Wilson)

PURCHASE POSTPONED

Procurement action for the Ribbon Bridge Erection Boat (RBEB) has been postponed pending an evaluation of the United Kingdom Combat Support Boat (CSB) and a similar boat designed by Alcoa. Upon completion of the testing in July, a selection of one of the three boats under consideration will be made and a letter contract awarded not later than 30 September. Subsequent to the cancellation of the procurement action, the Office of the Deputy Assistant Secretary of the Army (Acquisition) withdrew approval of the procurement plan for the standard boat with welded hull. A new or updated procurement plan must be approved before further procurement action can be taken.

FACTS AND FIGURES

Military strength figures for 30 November 1979 were: total DOD 2,029,194; Army, 765,602; Navy, 521,337; Marine Corps, 183,793; Air Force, 558,462. These figures represent full-time military personnel comprising both regulars and reserves on continuous active duty, as well as officer candidates, cadets attending Army and Air Force military academies, and midshipment at the Naval Academy. The Army figures include more than 400 general officers. As of 30 November, brigadier generals numbered 208, major generals 164, and lieutenant generals 32. Nine officers, in addition to General Edward C. Meyer, Army Chief of Staff, held the rank of general (four stars): Bernard W. Rogers, William A. Knowlton, Frederick J. Kroesen, John W. Vessey, Jr., John R. Guthrie, Donn A. Starry, Robert A. Shoemaker, John A. Wickham, Jr., and Volney F. Warner.

ORGANIZATION DAY

Soldiers of the 79th Engineer Battalion in Karlsuhe, Germany, compete in the pie eating contest during the unit's Organization Day activities last September. Other activities included a nail driving contest, egg tossing, wood chopping, log sawing, and several races. But from the looks of it, the pie divers had the most fun. (Photo by PVT James Honeywell)

LETTERS

"MGB MYTHS AND MISUNDERSTANDINGS"

Dear Sir,

In the Fall 1979 issue, Captain Hambric's article, "MGB Myths and Misunderstandings," laid to rest any technical doubts on the subject. However, he also challenged the doctrinal issue of a multi-bridge (MGB/Bailey) company proposed by Major Ramsey in the Winter 1978 issue. Each author listed basically only two arguments for/against this proposal. Pro arguments detailed the non-likely assault role of either panel bridge and the ability to respond to the most likely requirement. Rebuttals listed the difficulty of dual training/readiness and command/control of widely separated work parties. Captain Hambric departed from his expertise in his haste to defend a single bridge company, for both of his arguments apply to either concept. As separate companies, each has the capability to erect two bridges simultaneously in widely separated locations. This possibility is independent of the single-versus-multiple bridge concept. It is expected that the higher headquarters would strive to keep missions within a close proximity when possible. When this is not possible, the platoon leader and platoon NCOs have all the ability to operate alone, something Captain Hambric seems to doubt. Secondly, dual (MGB/Bailey) training is required for all personnel of the company who possess MOSC 12C, Bridge Crewman. They must pass SQT in the technical aspects of both bridges. These assets are here to stay. The Bailey outnumbers MGB more than six to one (12 to 1 in Europe). Maintainability is mostly a function of money, as sandblasting and painting will restore serviceability. Simple arithmetic will show that an MGB Company will be hard pressed to avoid erecting Bailey. Erection sets are also in stock and the MGB has one more than the required 29 five-ton dump trucks to pick up a set. Therefore, the advantages proposed by Major Ramsey are more than sound. Serious consideration should be given to the dual mission company. TOE need not be changed; the implementation of this concept can be accomplished by MTOE. And accomplished it should be, for an additional reason: combat support assets must be minimized to allow the maximum of combat assets, including engineer assets, to be deployed forward in Europe.

DOUGLAS K. Lehmann
Falls Church, VA

"CHALLENGES TO ENGINEER DOCTRINE"

Dear Sir,

This letter is addressed to Major Stephen E. Draper's article, "Challenges to Engineer Doctrine," which appeared in the Fall 1979 issue of *ENGINEER*. The conclusions of Major Draper's article on challenges to engineer doctrine are correct, and while already in practice in some units, should be adopted as doctrine. Not too long ago, it was the approved solution to always dismember the Direct Support company such that each maneuver task force received a platoon and each company team received a squad of engineers. This often made meaningful support impossible, since it stretched the command and control, and logistical support capabilities of the company and platoon headquarters to the breaking point. The final result too often was lost, unfed, and non-working squads, whose platoon leaders had become pure "advisors." These problems are alleviated if Major Draper's suggestion of allocating resources on a task basis is adopted. Further, we should consider the entire framework of engineer taskings within the division. It may become necessary to switch the "normally associated" Direct Support company from one brigade to another, notwithstanding all the advantages which that association accrues. For example, when the counterattack eventually is made, the lead task forces' requirements would dictate an entire DS company per task force. Clearly, they will be needed, and equally clearly, "soft" Corps combat engineer units will have survivability problems. A plausible solution is to concentrate the divisional engineers and let the Corps units fill in the "risk" areas. As mobility and countermobility become more important, we must insure that our engineers also "get there fustest with the mostest."

Captain Dominic Izzo
California Institute of Technology
Pasadena, CA

UNIT LISTING

Dear Sir:

We, in the ROTC Instructor Groups, who are producing engineer officers, are in need of a current listing of engineer units and their locations. Recommend a future issue include current locations of active engineer battalions in CONUS and overseas. Those overseas should also name the location and the zip code. Similar information for USAR and ARNG units would also be helpful and informative to the entire Corps.

MAJ Charles G. Marvin
PMS, University of Missouri-Rolla

Space limitations preclude publishing the addresses and locations of all Active and Reserve Component engineer battalions at this time. However, the information you requested is available in the Engineer Units and Advisor Directory *published by The Engineer School and distributed to all Active and Reserve Component engineer units company size and larger. The 1980 directory is scheduled for publication in March and should reach the field in early April. You may request a copy of the 1980 directory by writing to: US Army Engineer School, Training Management Division ATTN: ATXA-DTR (Unit Training), Fort Belvoir, VA 22060, or telephone commercial 703-664-3008 or AUTOVON 354-3008.*

Apologies to members of the 2nd, 9th, and 15th Engineer Battalions for the incorrect identification of their respective units under "Commanders Update" in the Winter 1979–80 issue of *ENGINEER*. The correct designations are:

2nd Engineer Battalion
2nd Infantry Division
Camp Casey, Korea

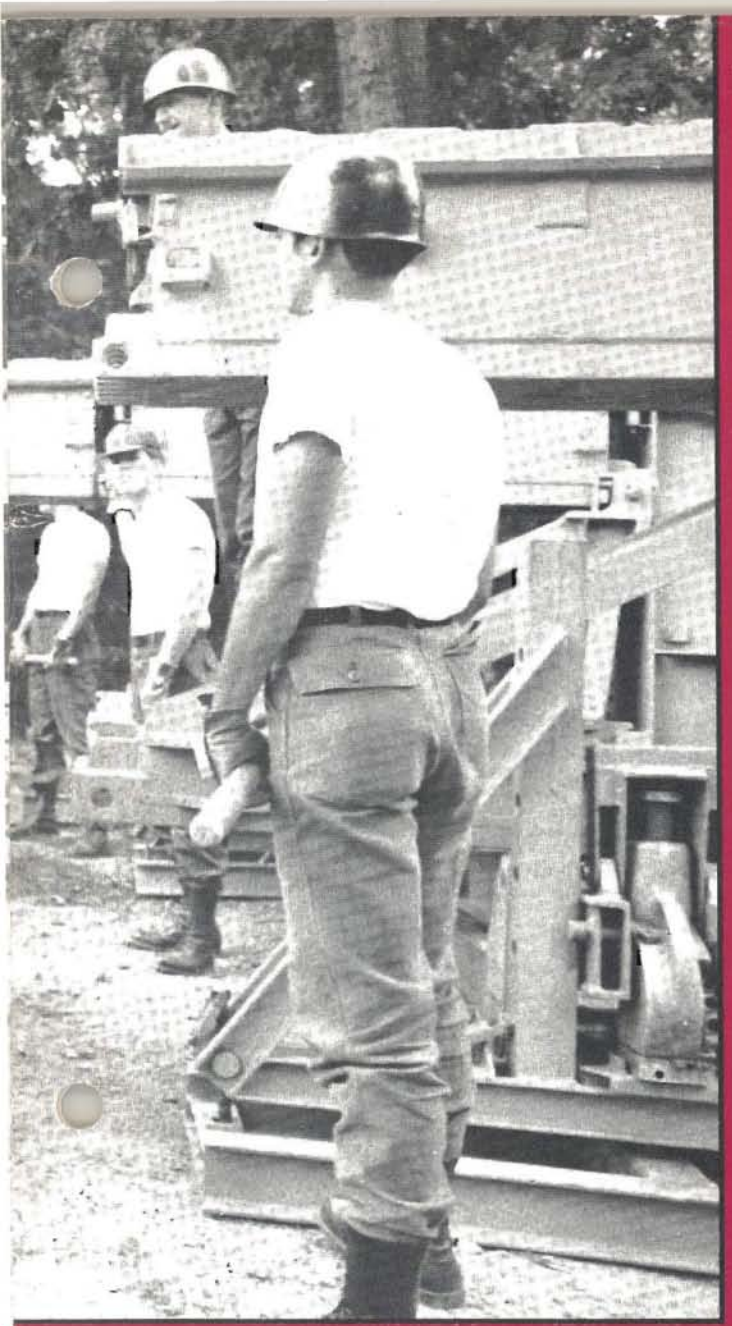
9th Engineer Battalion (c)
USAREUR

15th Engineer Battalion
9th Infantry Division
Fort Lewis, WA

New Mold for ENGINEER LIEUTENANTS

Hands-on training and new class structure are keys to improved Office Basic Course

by SP4 Jim Eady



Left, students get hands-on training with medium girder bridge. Below, students plot reconnaissance route during FTX at Fort A.P. Hill

The only true test of the effectiveness of military training is war, but most experienced observers, including senior NCOs and officers alike, agree that today's new engineer lieutenants are the best trained in our history.

The Engineer Officer Basic Course (EOBC), a mandatory 14-week course of intensive instruction for all new engineer lieutenants, has always ranked among the best branch basic courses. But its reputation has been considerably enhanced in the three years since undergoing major surgery in 1977. Two significant improvements emerged at that time. One was the implementation of extensive hands-on training. The other and more significant improvement was a completely redesigned class structure that emphasized the development of leadership ability.

Classroom size was reduced from about 120 students to about 40 students, or normal platoon size. Three trainers were assigned to each platoon—one captain, one first lieutenant, and one senior NCO. But the students, themselves, were assigned to the leadership positions within each student platoon. Each student served as platoon leader, assistant platoon leader, or squad leader for at least one week during the 14 weeks.

Continuous monitoring of student performance, both in the classroom and in a hands-on environment, is a dominant characteristic of the

new EOBC. Students are evaluated as both leaders and followers and counseled on their performance in each category. Ample opportunity is provided for self-improvement and for achieving high standards in academics, leadership, and physical fitness.

Platoon trainers actually conduct about half of the training; thus, they play a significant role in student development. An integral part of almost every training day is "trainer's time," a replacement for the old "commander's time," which was essentially a free period. "Trainer's time" provides students with an opportunity to clarify classroom misunderstandings and misconceptions, and to gain a better perspective of their individual progress.

Captain Kerry Pierce, a graduate of the old course and now an EOBC trainer, believes the changes have significantly upgraded the quality of instruction.

"When I went through the course, instruction was very impersonal," says Pierce. "There was very little of the troop-related things that are important when students go to the field. With the new platoon structure, students get interaction with a lot of troops, NCOs, and experienced officers. It gives them a better idea of what they'll be doing in their assignments."

The decision to incorporate hands-on training into the EOBC schedule resulted from a TRADOC directive that all new lieutenants would be trained in the individual tasks of their enlisted counterparts. In response to the directive, Engineer School administrators pinpointed the skills critical to engineer lieutenants, established minimum standards of performance, and devised methods of testing those skills.

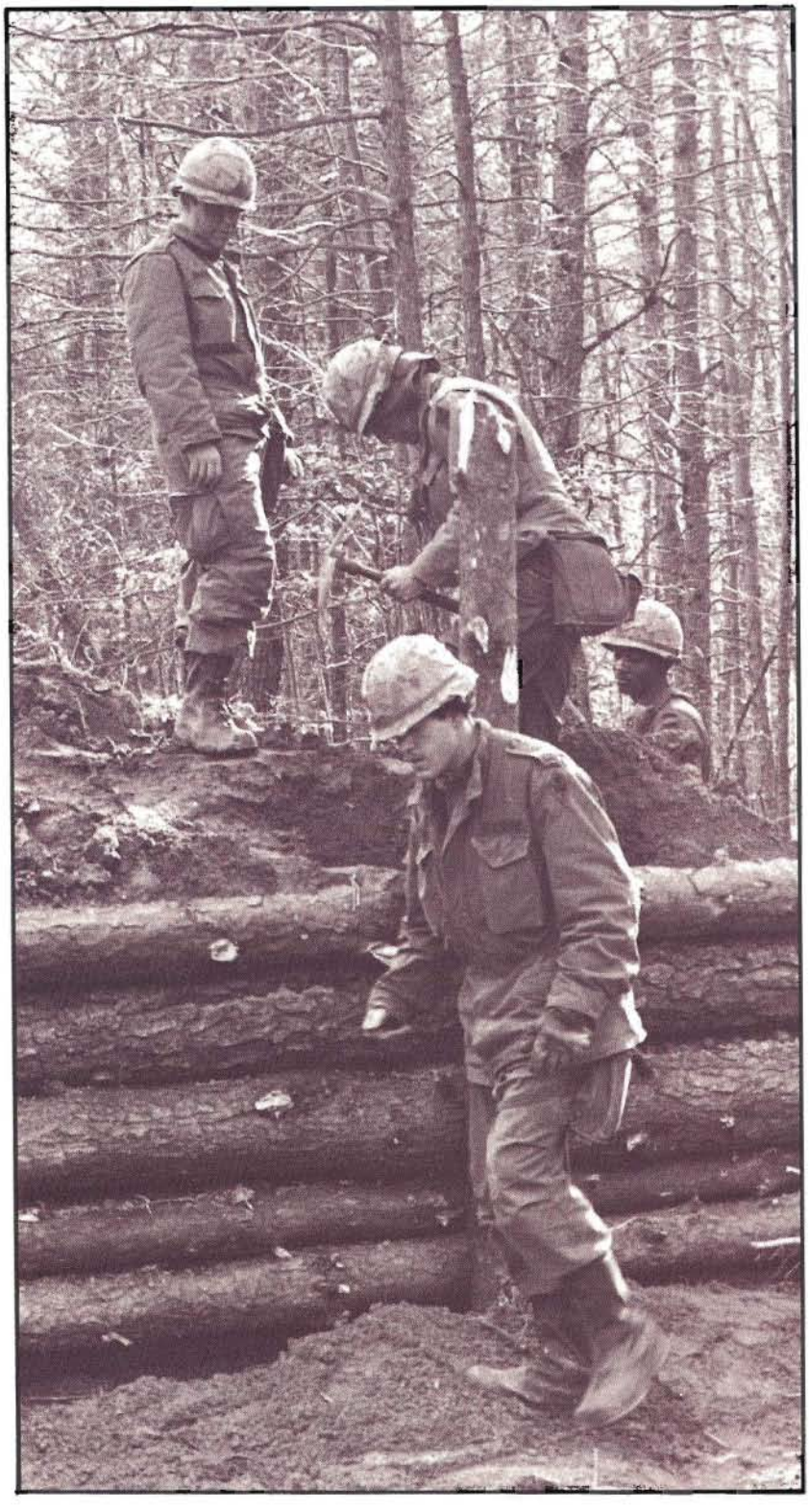
From that time on, students weren't simply told how to operate bulldozers, they were given the opportunity to actually do it. And to complement the hands-on training, instruction was provided on management of personnel and equipment

Above, EOBC student mans machine gun during reconnaissance exercise. Below, platoon trainers take time to evaluate students' progress during FTX

resources. Afterall, planning, directing, and managing are the primary tasks of new engineer lieutenants, according to Major Joel Boyd, Chief of the EOBC Training Division at the Engineer School.

"The hands-on training helps students understand what is involved in soldier tasks," says Boyd. "They know the impact on the soldier and, most importantly, they know if the job is being done right."

EOBC is now conducted in three phases, each phase representing a different area of soldiering. The first phase covers general military skills, such as physical training, rifle marksmanship, and first



Students at left prepare demolition charge for log crib. Below, student reviews notes during preparations for FTX

Engineer lieutenants learn techniques of rappelling during EOBC

EOBC students use probe to search for mines during reconnaissance mission

aid. The second phase deals with combat construction. And the third phase is strictly combat engineering. A total of 161 engineer tasks are taught on a "go/no-go" basis. Each student is permitted three chances to satisfactorily perform each task. Any student who does not get a "go" on every task does not graduate. Its that simple.

Since the new curriculum includes more than mere classroom lectures, it may appear, on the surface, much tougher than the old curriculum. However, the hands-on concept of training has actually made the learning process easier and more efficient, according to Major Boyd.

"The course is probably easier to pass now than before it was revised because students now have a chance to apply the fundamentals they're taught in the classroom" says Boyd. "It makes learning easier."

The climax of EOBC is a seven-day field training exercise (FTX) at nearby Fort A.P. Hill. During the exercise, students perform a multitude of tasks, including weapons qualification, tactical bridging, true demolitions, minefield reconnaissance, and route and river reconnaissance. Many tasks, such as tactical bridging, are accomplished during hours of darkness.

The Engineer School's Directorate of Evaluation conducted a survey last year in an effort to determine the effectiveness of the revisions to EOBC. Although objective conclusions could not be derived from the collected data, comments by many field commanders reinforced the belief that engineer lieutenants are, in fact, better trained than ever before.

One commander surveyed said, "In general, the problem with new lieutenants is a lack of experience, not a lack of education or training. We will give them the experience. Therefore, I have no recommendations for EOBC training, whatsoever. I am perfectly satisfied with your product."

Another commander responded, "From what I have heard of the new EOBC, I wish I had had the current course of instruction when I went through in 1963."

There is little doubt that new lieutenants still require a "climatization period" when they graduate from EOBC and report for their first duty assignment. But thanks in large part to the revised EOBC curriculum, the period of climatization has been reduced substantially in the last 2–3 years. EOBC still has a few "kinks" that need to be ironed out, but overall, it now provides the hands-on and leadership training required to instill real confidence in new engineer lieutenants.

What will it take to fully integrate the engineer system into the maneuver element's battle plan?

THE BATTLEFIELD

Tactically QUALIFIED, Technically PROFICIENT

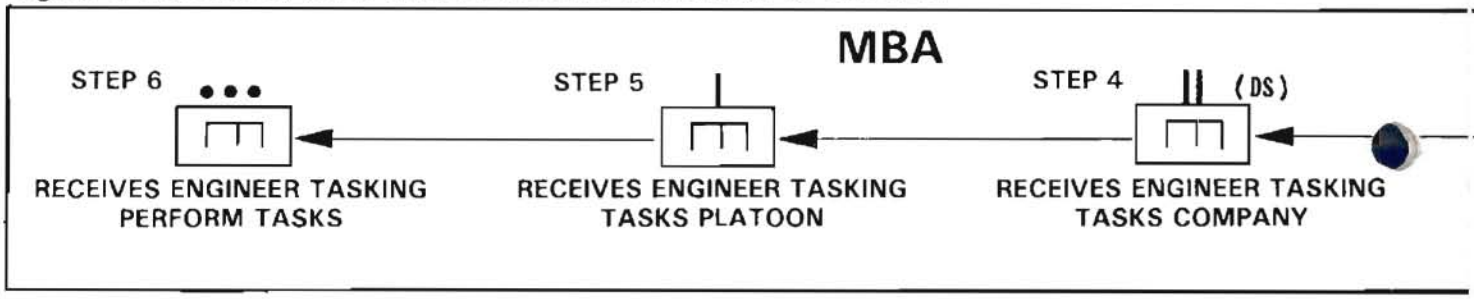
by CPT Dana Robertson

If we are going to win the first battle of the next war, engineers must be doers as well as advisors. We have to be an active, risk-taking partner with the rest of the combined arms team. This partnership involves providing the support necessary to fully use terrain and, therefore, enable the maneuver commander to "fight outnumbered and win."

In addition to mastering the technical aspects of combat engineering, the engineer must also fully understand the basic doctrine and concepts of the manuever element. Only then can he properly employ all components of engineer systems to support the maneuver plan. The engineer's ignorance of maneuver tactics and operations may have little or no effect in a peacetime training environment and, in fact, may never be identified as a shortfall in the normal course of maneuver unit training. It could, however, be the difference between success or failure on the battlefield and, therefore, must concern every engineer.

The engineer commander cannot integrate engineer systems with the maneuver element's battle plan without first understanding the tactics and operations of his own maneuver element and those of the Threat. Due to the rapid pace of warfare projected by Threat doctrine, the engineer may have to integrate engineer systems with the maneuver element's battle plan in the absence of the maneuver commander. The engineer must be

Figure 1. TASKING OF A DS CORPS ENGINEER BATTALION TO DIVISION



able to take appropriate, aggressive action based upon his knowledge of the tactical situation. Decisions will have to be made on time and without error—the first time.

In the past, our ability to integrate the engineer system with the maneuver element's battle plan has often been less than satisfactory. We can expect this situation to continue as long as we consider the engineer system without first identifying the needs and limitations of maneuver elements. We must continually emphasize the potential of the engineer system as a combat multiplier on the battlefield. Other members of the combined arms team will demand engineer support if they are convinced it has value to them.

Engineers can employ various means to gain an insight into maneuver element tactics. One method involves studying Field Manuals which form the basis for maneuver element tactics. FM 71-1, FM 71-2, and the new FM 71-100 should be as familiar to the engineer as FM 5-34 and the long awaited FM 5-100.

In addition, a knowledge of maneuver tactics can be gained by frequent association with the maneuver commander. This association will allow each to understand the other's limitations and strongpoints. Pertinent information should be filed in the engineer's notebook for easy reference.

For the integration process to be complete, the engineer must be active during the early stages of the maneuver element's planning. Terrain structuring, whether in the offense or defense, is primarily an engineer responsibility which must be accomplished prior to committing maneuver forces. To expect the engineer to develop the terrain as an effective combat multiplier in the final stages of planning is unrealistic.

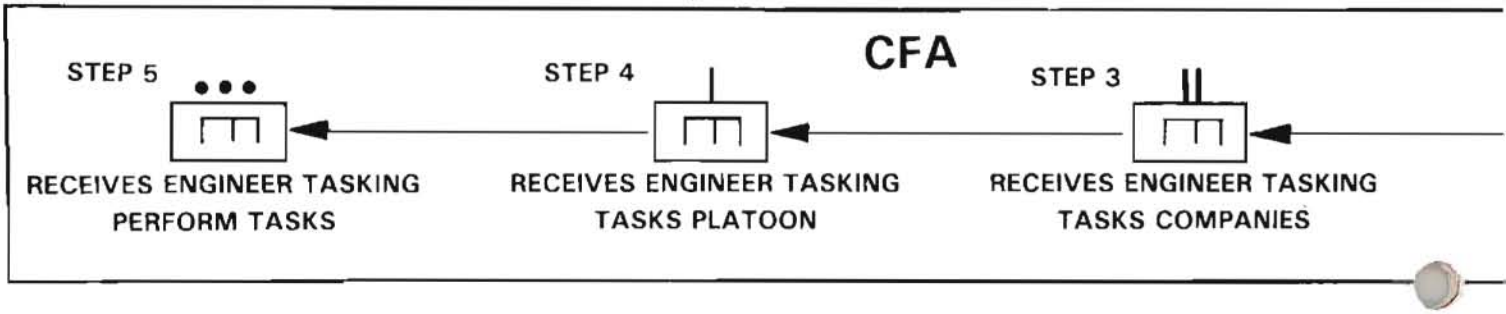
A beneficial by-product of the integration process will be the development and procurement of new combat engineer equipment. Other members of the combined arms team must be convinced that engineer equipment which enhances the maneuver element's mobility and survivability while reducing Threat mobility are as indispensable as new high-performance aircraft, XM1 tanks, and infantry fighting vehicles.

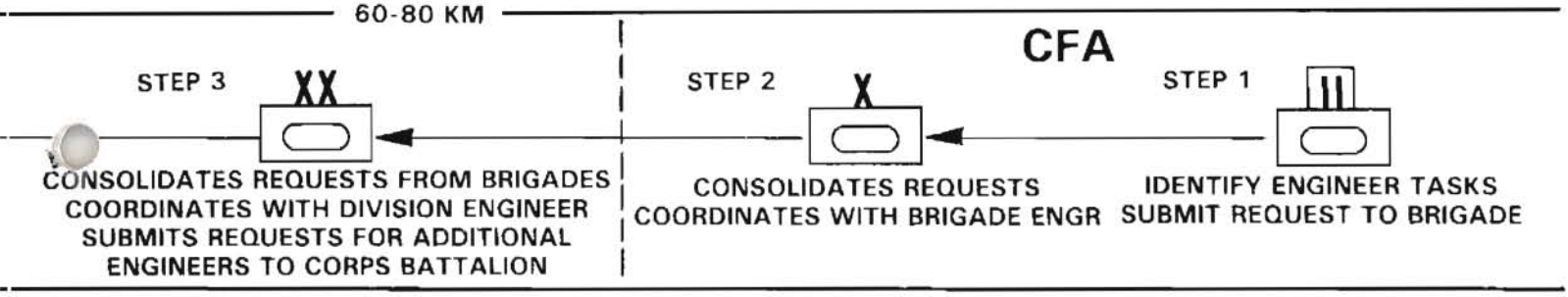
The integration of the engineer system with the maneuver element's battle plan is also restricted by the mis-utilization of engineers. This problem results when engineer commanders are not cognizant of the constraints and limitations of each of the various command and support relationships. These relationships will often have an impact upon engineer efforts to adequately support maneuver elements.

All too often, the engineer commander, especially at higher levels, opts for a support relationship (DS or GS) instead of a command relationship (opcon or attachment). Although the engineer commander maintains "command" over his subordinate units with a support relationship, he is limiting the support provided to the maneuver element and the flexibility of his subordinate engineer commanders to respond to the needs of the lower echelons.

When deciding how to best employ his engineers, the commander must examine every aspect of the tactical situation, starting with the needs of front line maneuver elements, down to and including task force level. For example, consider the situation where the Corps Engineer has placed a corps engineer battalion DS to a division. Engineer requirements for the division

Figure 2. TASKING OF AN ATTACHED CORPS ENGINEER BATTALION TO MANEUVER BRIGADE





will preclude placing all divisional assets in the CFA. Hence, a mixture of corps and divisional engineer units is required.

Can the DS corps engineer units provide support to the CFA, given the logistical and command constraints imposed by the distance between the parent battalion and its companies, or between the Corps battalion and its parent brigade? In most cases, the parent engineer unit will find it next to impossible to command and logistically support its subordinate units due to the excessive operating distance between units.

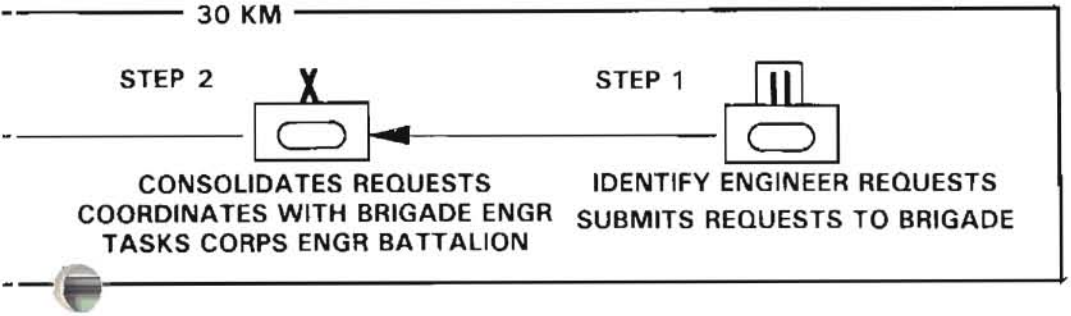
In addition to the limitation imposed by distance, consideration must also be given to whether the corps engineers can provide timely support at the task force level. The normal procedure for requesting engineer support from a unit which is DS to the division appears in Figure 1. Responsive engineer support to task forces located in the CFA cannot occur in this particular situation. The same constraints exist in the Main Battle Area. Engineer companies must frequently operate at a great distance from their parent battalion. Hence, the battalion commander is still faced with the command and logistical support problems associated with providing engineer support to the CFA. Task forces must request engineer support through lengthy communication channels, which may limit responsive engineer support. This example illustrates the fact that inappropriate assignments result in unresponsive engineer support, as well as the creation of logistical and engineer related problems.

The logical solution is attachment. This allows the maneuver commander efficient and timely engineer support. With the corps engineer battalion attached to the division, engineer companies and platoons can be attached to maneuver brigades and task forces, respectively. As Figure 2 illustrates, engineer request channels are shortened, resulting in faster and more flexible engineer support. Note that the distance between the task force and the engineer company has also been substantially reduced.

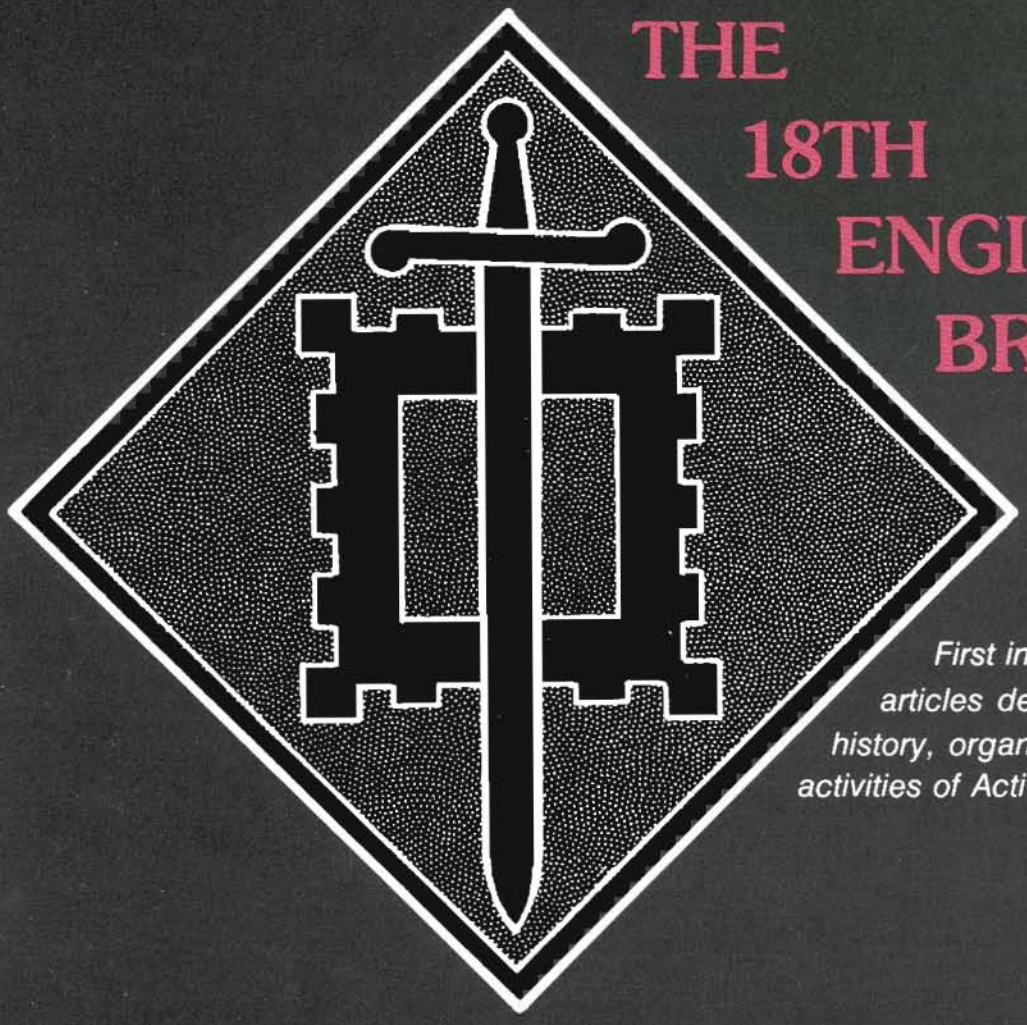
Historically, engineers have opted for support relationships. Engineer commanders could thus still exercise their command option. In reality, however, the extended distance between the engineer commander and subordinate units prevented a true command relationship. As a result, maneuver elements have taken certain liberties which, in effect, created quasi-command relationships between themsevles and engineer units. This has further added to the confusion over command and support relationships. It is high time that the engineer community take a look at those command and support practices which do not maximize engineer support to maneuver elements.

There are no shortcuts or alternatives for providing maneuver elements with engineer support. The engineeer must understand the maneuver element's tactics and operations, as well as his own. Every effort must be made to fully employ the combat engineer on the battlefield. Only then will integration of the engineer system with the maneuver element's battle plan take place. Only then will we be truly considered part of the combined arms team.

CPT DANA ROBERTSON is an instructor with the Tactics and Operations Division, Department of Combined Arms, U.S. Army Engineer School, Fort Belvoir, VA. He is a previous contributor to ENGINEER.



★ Note that the distance between the Task Force in step 2 and the Engineer Battalion in step 3 is kept to a minimum to allow for responsive Engineer support.



THE 18TH ENGINEER BRIGADE

First in a series of articles describing the history, organization, mission, and activities of Active Army engineer units

The 18th Engineer Brigade has a relatively short, but distinguished history which began on 29 July 1921, when its predecessor, the 347th Engineers, was constituted as an Organized Reserve unit. The regiment was ordered into active military service on 6 May 1942 at Camp Claiborne, LA, and was reorganized and redesignated the 347th Engineer General Service Regiment.

The regiment was deployed to England in August 1942 and remained there until June 1944, when it joined the American Expeditionary Forces in the campaigns of Normandy, Northern France, Rheinland, and Central Europe. The 347th later received the Meritorious Unit Commendation for service in the European Theater. It states:

"By working diligently over long periods of time, this organization rehabilitated hundreds of miles of railroad, thus enabling the continuance of an expeditious and efficient flow of supplies to the armies in the field. The tireless efforts, ingenuity and technical skill demonstrated by personnel of the 347th Engineer General Service Regiment were in keeping with the highest traditions of the armed forces of the United States."

The 347th Regiment remained on occupation duty in Germany until it was inactivated in June 1946. It was reactivated in the Organized Reserve a year later, with headquarters at Salt Lake City, UT, where it remained until it was inactivated again in March 1949.

On 25 October 1954, the unit was redesignated as Headquarters and Headquarters Company, 18th Engineer Brigade, and activated as a Regular Army unit at Fort Leonard Wood, MO. The unit remained at Fort Leonard Wood until it was inactivated again in March 1963.

The 18th Brigade was reactivated in July 1965 and deployed to Vietnam two months later. It was inactivated in Vietnam in September 1971 after receiving four Meritorious Unit Commendations for support of military operations.

The 18th Brigade was reactivated from elements of the former 24th Engineer Group (Construction) in October 1977 at Karlsruhe, Germany, where it is presently headquartered.

MISSION AND ORGANIZATION

Today the 18th Engineer Brigade is the only Combat Heavy engineer brigade on active duty within the United States Army Europe (USAREUR). Its peacetime mission is: to maintain combat readiness; to manage and execute the USAREUR Troop Construction Program; and to provide topographic support in Theater. By maintaining a high state of combat readiness, the Brigade is prepared to accomplish its wartime mission, which is to provide a full spectrum of engineer support for all U.S. forces in Southern Germany to the rear of the Corps' rear boundaries.

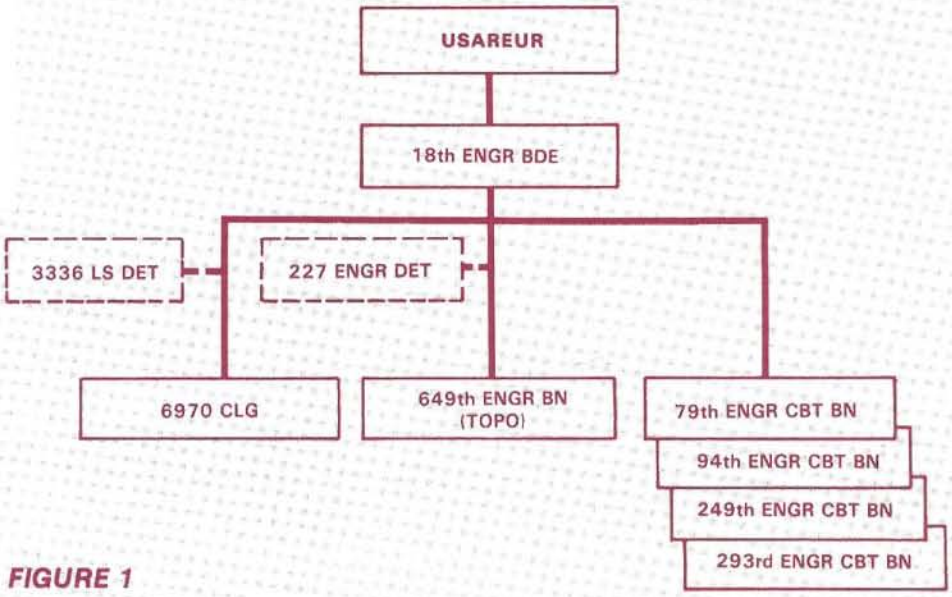


FIGURE 1

The 18th Brigade is considered a USAREUR engineer asset and is organized for its peacetime mission as shown in Figure 1. The organization consists of four Combat Heavy battalions, a Topographic battalion, and a Civilian Labor Group (Engineer Construction). Brigade Headquarters contains Labor Service Liaison and Topographic Detachments which provide Brigade-level planning and control for the Civilian Labor Group and the Topographic battalion. Authorized Brigade strength is approximately 4,200, including about 1,000 Labor Service employees.

Brigade capabilities are significant and represent a major contribution to USAREUR's wartime mission and its peacetime activities. Its peacetime contributions include construction support of the USAREUR quality-of-life and combat readiness goals, as well as topographic support. Wartime contributions would include construction and combat engineering tasks. Brigade capabilities are shown in Figure 2.

PEACETIME ACTIVITIES AND COMBAT READINESS

Peacetime activities of the 18th Brigade are tailored to maintain unit combat readiness and soldier skills. Missions are translated into specific tasks; tasks are further defined in terms of training objectives, and prioritized; and appropriate time is allocated to schedule training, which includes combat engineer and individual soldier tasks, and the USAREUR Troop Construction Program.

Combat engineer and soldier training is

CAPABILITIES

20 VERTICAL CONSTRUCTION PLATOONS
13 HORIZONTAL CONSTRUCTION PLATOONS
3 HEAVY EQUIPMENT PLATOONS
18 GENERAL CONSTRUCTION PLATOONS

SPECIAL OPERATIONS (CLG)
- ASPHALT PAVING
- CONCRETE PAVING
- CONCRETE BATCH PLANT

TOPOGRAPHY
- MAPS
- TERRAIN ANALYSIS
- TERRAIN SURVEY

FIGURE 2

performed at home station, local training areas, major training areas, and in major field training exercises, such as REFORGER. Participation in the Troop Construction Program provides valuable experience for the Brigade's construction specialties. The quality and quantity of training provided by troop construction projects could not be gained without the financial assistance of the USAREUR construction accounts. In addition, construction is accomplished to support NATO activities and the Air Force.

USAREUR derives two prime benefits from the Brigade's Troop Construction Program. First, it enhances Brigade combat readiness. Second, it provides new and improved facilities (approximately $9 million worth in FY 78).

Due to the shrinking value of the dollar in placing European construction and the resulting savings from troop construction, the Brigade will be engaged to a greater extent with MCA horizontal construction projects in the future. To complement the previous capability for asphalt paving, the Brigade recently procured a concrete paving train. The addition gives the Brigade a full range of equipment to accomplish horizontal construction projects. Vertical construction will continue to have a high priority.

Skills gained in the Troop Construction Program and the ambitious combat engineer training program prepare Brigade personnel to provide reliable support to USAREUR in peace and war.

Yet another peacetime activity which contributes to combat readiness is participation by the Brigade and its subordinate units in the "Partnership Program" with German Army units. Participation in joint training exercises and social events provides valuable interoperability experience.

Minefield Approximate Grid Indicator Coordinates

A fast, simple alternative method of reporting the location of enemy minefields

by LTC Bruce W. Baumann

Current U.S. tactical doctrine emphasizes mobility and maneuverability in conducting the active defense. Since the enemy is certain to use mines extensively in both offensive and defensive operations, we must be able to detect and breach minefields with a minimal loss of momentum and by using the least amount of breaching resources.

The active defense requires that maneuver units, engineers, and other supporting units rapidly detect mined areas in order to maintain mobility to concentrate, or to move laterally and occupy successive battle positions throughout the covering force area and the main battle area. Without all-source capabilities for detecting minefields and rapidly communicating information to maneuver commanders, the traditional detection of mines by tactical encounter—soldiers stepping on mines or vehicles running over them—will continue.

In order to provide the maneuver unit commander with the flexibility to conduct a bypass, or with the time and distance to prepare for breaching operations, the location and size of an enemy minefield must be reported to the next higher command at once. Current procedures for reporting enemy minefields are listed in FM 20-32, Mine/Countermine Operations at the Company Level. They require the unit locating the minefield to submit the following data:

- Map sheet designation;
- Date and Time of collection of information;
- Type of minefield;
- Coordinates of minefield extremities;
- Depth of minefield;
- Enemy weapons or surveillance;
- Estimated time to clear minefield;
- Estimated material and equipment needed to clear minefield;
- Routes for bypassing minefield (if any);
- Coordinates of lane entry;
- Coordinates of lane exit;
- Width of lanes, in meters;
- Other information such as types of mines, new mines, boobytraps, etc. In addition, the reporting unit is required to mark the minefield and record it on the standard Minefield Record (DA Form 1355).

The process of encoding and transmitting the enemy minefield report is time consuming and susceptible to errors of information. An alternative method of reporting the approximate location of enemy minefields over radio or telephone without transmitting a series of grid coordinates and without encoding the message is known simply as "MAGIC," an acronym for Minefield Approximate Grid Indicator Coordinates. The MAGIC protractor consists of a template marked with various numbered shapes. The center of the template is indicated with a cross, while the perimeter is segmented into degrees.

Use of the MAGIC protractor requires the following steps:

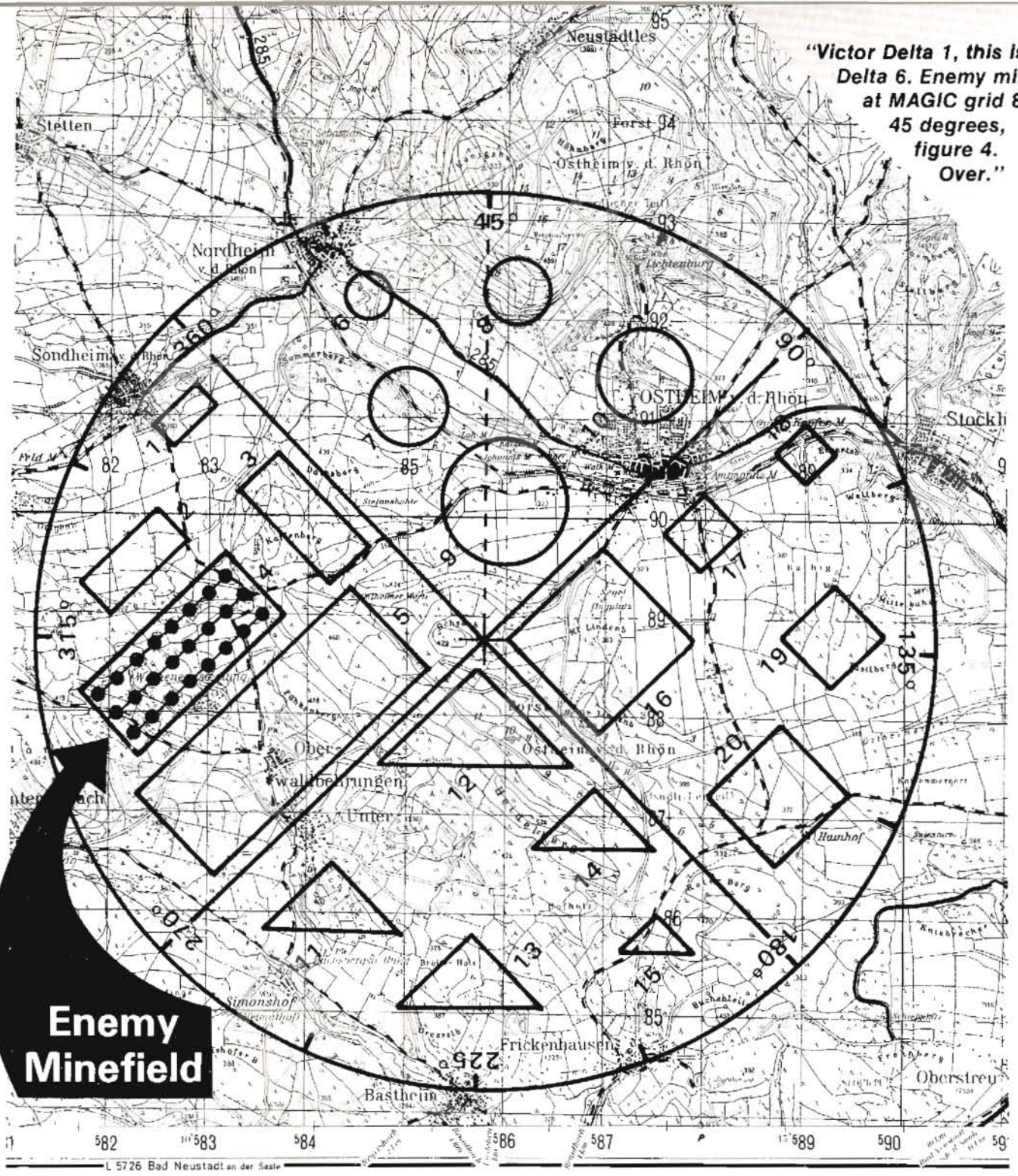
(1) Place the MAGIC template on the map, and over the plotted enemy minefield so that its boundaries fall within one of the appropriate shapes;

(2) Read the grid coordinates from the center of the MAGIC template, not from the center of the enemy minefield;

(3) Read the bearing in degrees where an imaginary line running grid north from the center of the template cuts the perimeter of the protractor;

(4) Transmit the message giving the grid coordinates, the bearing, and the shape number. Encryption of the message is not required, since enemy information is being reported.

The MAGIC method of reporting enemy minefields is currently employed by all engineer units of the First British Corps and some engineer units in the U.S. Seventh Army, both stationed in the Federal Republic of Germany. It is included in the Field Standing Operation Procedures of both units and is employed during their field training exercises.



MAGIC template has been placed on map so that minefield falls within boundaries of appropriate shape

The MAGIC concept should be evaluated by all combat, combat support, and combat service support units as a rapid method of reporting the location and size of enemy minefields. Ultimately, it should be included in the next revision of FM 20–32.

LTC BRUCE W. BAUMANN is the Senior Projects Officer, Concepts and Studies Division, Directorate of Combat Developments, U.S. Army Engineer School, Fort Belvoir, VA.

The Total Force

A look at the organization and objectives of our Reserve Components

by CPT Barry D. Willard

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

Combined Arms Training for the Reserve Components

More realism, higher morale, and improved readiness are possible

by LTC William I. Travis

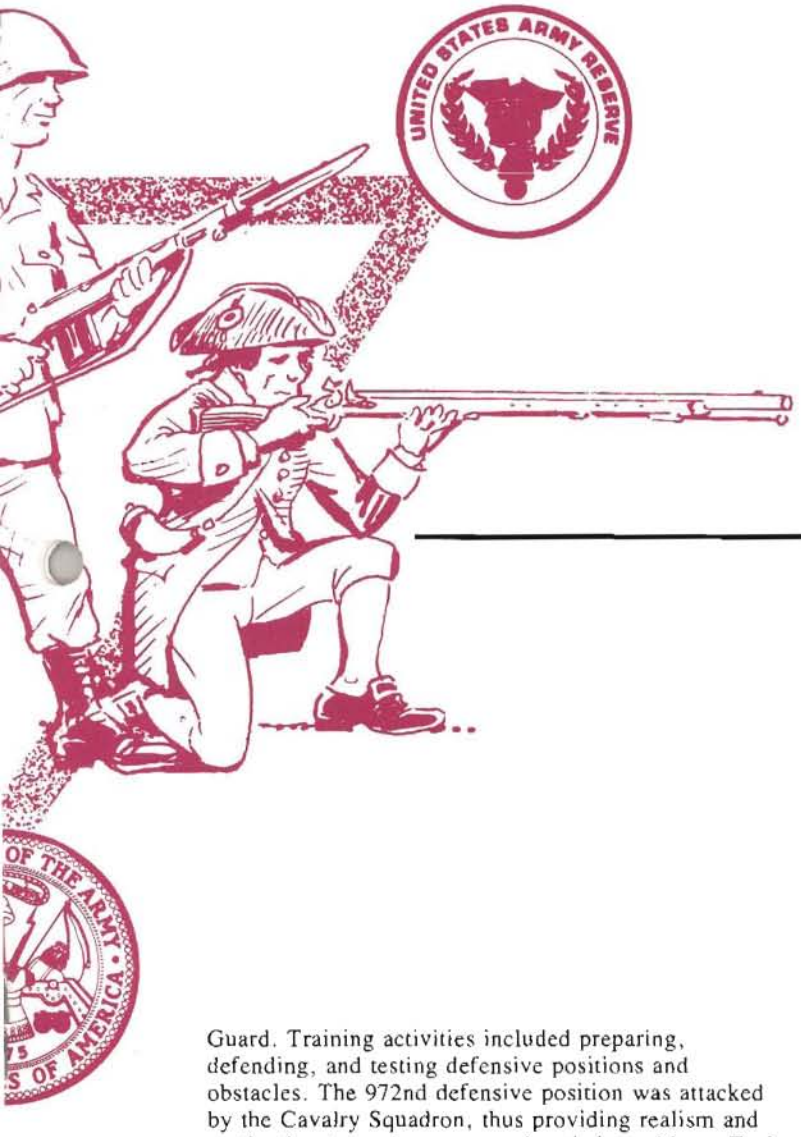
Training with other units adds a high degree of realism, provides appreciation for other units' capabilities, increases unit morale, and improves the readiness posture of all units involved. Training activities of the 972nd Engineer Battalion (Combat) (Corps), U.S. Army Reserve, during the period from October 1977 through October 1979 demonstrates the benefits of such training.

OCTOBER 1977 MUTA-5

The 972nd Battalion conducted mutual support training at Camp Atterbury, IN, with elements of the 1st Squadron/238the Armored Cavalry, Indiana National

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

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



The first visit to a Reserve Component unit by an advisor fresh from an active duty battalion assignment can be an eye-opener. It is important not to develop first impressions of a unit without seeing the unit as a whole. To an officer fresh from the European environment where motor pools and work areas must be maintained in almost "spit and polish" condition, that first visit to a Reserve Component motor pool, where maintenance is carried out by a few civilian technicians on a continuing basis, can be unnerving.

Guard. Training activities included preparing, defending, and testing defensive positions and obstacles. The 972nd defensive position was attacked by the Cavalry Squadron, thus providing realism and motivation to engineers preparing their positions. Each platoon position was critiqued by Readiness Region personnel.

An antitank ditch and log crib were also constructed to determine their effectiveness. During the test, a tank attempted to cross the ditch and overrun the log crib. Engineers and tankers alike learned that a well-constructed log crib will withstand three rams of a tank and that antitank ditches significantly decrease tank maneuverability.

JUNE 1978 ANNUAL TRAINING

The 972nd conducted mutual support training with the 142nd Field Artillery Group, Arkansas National Guard, at Fort Chaffee, AR. Firing positions for the Artillery Group were prepared by the 972nd. The Artillery Group commander critiqued the positions, after which artillery personnel fired their weapons. Artillery personnel also gave the engineers an orientation on artillery weapons and instruction in artillery fire adjustment.

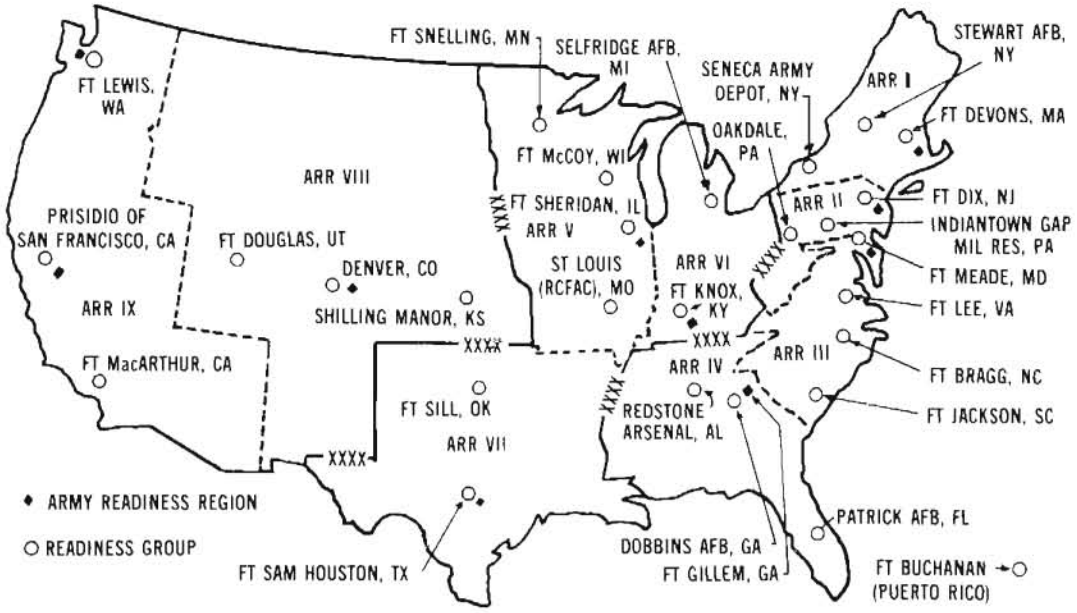
Most engineer personnel were airlifted back to garrison at the end of the four-day FTX by the 536th Air Company, Texas National Guard. Helicopter personnel also instructed engineers in loading and unloading procedures.

In addition, all engineer NCOs received a 12-hour block of instruction on coaching and counseling techniques designed for retention counseling and improving personal communications. Instruction was provided by a US Army Reserve School instructor who conducts similar management seminars in his civilian profession.

NOVEMBER 1978 MUTA-5

Engineer squads conducted pinpoint minefield and target folder tasks while masked and operating under smoke cover provided by the 224th Chemical company, USAR.

FIGURE 1



But seeing what can be accomplished and the excellent condition of most of the vehicles, it is evident that "eye wash" in the motor park is not necessary to maintain equipment. Some active units could take lessons on vehicle maintenance from this small group of dedicated technicians who do not, as a rule, have much assistance except on drill weekends. A full-time administrative-supply technician (AST) keeps the armory operating on a day-to-day basis. An ARNG technician holds a position in the unit for which he works; a USAR technician must be a member of a USAR unit but not necessarily the one for which he works as a technician.

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

APRIL 1979 MUTA 4

The 70th Training Command, 70th Training Division, Indiana Army Reserve, provided instruction, supervision and facilities for the Engineer Battalion's annual weapons qualification and familiarization training, including M16, M203, M60, and Dragon Missile training. Medical support was provided by the 337th General Hospital, Indiana Army Reserve.

MAY 1979 ANNUAL TRAINING

The 972nd and the 652nd Float Bridge Company, Wisconsin USAR, provided mutual support during annual training at Fort McCoy, WI. The 652nd operated M4T6 Class 60 rafts to cross engineer personnel during a tactical night relocation involving a night river crossing operation. Much prior planning and preparation by both units went into the operation, which required two nights to complete. It was the first time either unit had conducted a night tactical river crossing.

972nd Engineer Battalion personnel offload from helicopter provided by the 536th Air Company, Texas National Guard

Army installations for coordinating site training, field training exercises, etc.

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

What does an RC unit do during the year at its home armory? Normally after the annual training, which in fact amounts to a unit mobilization, about two or three drill periods are required to get the unit's equipment back in condition for the remainder of the year. Also during these periods, training is organized by the battalion for the coming year. Since this yearly training is scheduled in advance, post-AT training will reflect what was determined by the evaluators as weak or strong points in the unit. In some instances, training will continue to increase individual proficiency to higher levels and attempt to correct noted deficiencies in the past year's training. In this respect the advisors of the Readiness Groups can play a vital role if the unit recognizes this source of assistance.

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

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

CPT BARRY D. WILLARD is a Branch Assistance Team advisor, assigned to Headquarters, U.S. Army Readiness Region VI, Fort Knox, Ky.

OCTOBER 1979 MUTA 5

The 972nd combined efforts with the 122nd Tactical Fighter Wing, Indiana Air National Guard, and the Helicopter Attack Troop, 107th Armored Cavalry Regiment, Ohio Army National Guard, at Camp Atterbury, IN. The vulnerability of ground troops to air attack, and the need for camouflage, dispersement, and air defense was vividly demonstrated by low-level air attacks on a 972nd convoy by F-4 jet fighters and helicopters.

OTHER TRAINING

972nd platton leaders and platoon sergeants receive extensive instruction by Readiness Region personnel during Tactical Exercises Without Troops (TEWTs) prior to every FTX. In addition, the 972nd receives periodic finance and administrative assistance from the 425th Personnel Service Company and the 412th Finance Company, Indiana USAR.

LESSONS LEARNED

The key lessons learned by personnel of the 972nd Engineer Battalion, in conducting mutual support training with other Reserve Component units, include the following:

- Mutual support training is economical, requiring very little, if any, additional funding;
- ARTEP tasks should be selected which are mission-related for all participating units. Careful selection of tasks helps to insure a high degree of realism;
- Advance planning and coordination is absolutely essential. Each unit must evaluate training objectives, and coordinate with the other units to insure that training plans of each unit mesh;
- Simplicity is the key to successful mutual support training. Emphasis should be placed on basic, well-defined tasks which can be easily controlled;
- Commanders must use initiative in contacting commanders of other units near their Annual Training or Inactive Duty Training site.

CONCLUSION

In summary, the 972nd has found that training with other Reserve Component units adds a high degree of realism, provides appreciation for other units' capabilities, has a positive impact on unit morale, and improves the readiness posture of each participating unit more so than if each unit trained individually. The 972nd Engineer Battalion has adopted the motto "Where the Action is," and mutual support training has helped us live up to it.

LTC WILLIAM I. TRAVIS is the commander of the 972nd Engineer Battalion (Combat) (Corps), 372nd Engineer Group, U.S. Army Reserve.

a new look in
TOPOGRAPHIC SUPPORT

by COL Daniel L. Lycan & Val E. Sellers

New concepts pave the way for the first major change since World War II

Historically, winners of military campaigns, from Hannibal's unexpected crossing of the Alps during the Punic Wars to General Robert E. Lee's classic troop movements during the Civil War, have attributed much to their success to a superior knowledge and use of the terrain. Prior to the 20th century, however, most military tactical decisions were based on the commander's personal reconnaissance of the terrain or upon information obtained from scouts. For the most part, maps were rudimentary, even nonexistent.

The first major conflict of the 20th century witnessed the extensive use of maps by our allies in tactical operations, precluding the necessity for American forces to engage in large scale engineer intelligence activities. By war's end, however, three topographic battalions had been deployed with the General Headquarters of the American Expeditionary Forces. Each battalion engaged in the preparation of battle maps by overprinting existing base maps with enemy dispositions.

Prior to the beginning of World War II, U.S. military leaders recognized the potential scope of the forthcoming conflict and developed a modern, well-equipped mapping establishment with world-wide responsibilities. U.S. topographic units had been reorganized between the two global conflicts so that, during World War II, topographic support in the field was provided by a base topographic battalion, an engineer topographic battalion (Army), and corps company. In addition, direct operational control of engineer intelligence functions, including mapping, had been transferred to the chief engineer of each theater.

During the war, field units multiplied, acquired improved instruments, and matured in efficiency and reaction time. The Engineer Reproduction Plant was renamed the Army Map Service (AMS), moved to a new location, and dramatically increased its production. Collection activities and the library of foreign maps were also expanded. When the war ended, field units became miniature base plants, utilizing advanced technology to increase accuracy and improve rates of production. The Army Map Service continued to expand in all areas and increased its international mapping activities.

During the Korean conflict, the old Japanese Imperial Land Survey maps of Korea were converted and revised in record time. During the days of the waning French influence in Indochina, initial overall medium-scale mapping was produced in a matter of months. During the Vietnam conflict, the initial mapping effort was done by a field unit in Asia which had matured into a base plant organization that implemented international mapping agreements and expanded its capability through commercial contracts; however, the Army Map Service subsequently regained dominance by producing numerous revised editions to maintain current coverage of the war zone.

Technology was not idle during these years, and advanced topographic instrumentation and data acquisition systems were developed. However, they were too sophisticated to replace worn out and obsolete equipment used by field units. By the mid 1960s, studies indicated that a new concept of operations would more effectively fulfill the need of Army commanders in tactical situations. The new concept supported the view that basic general purpose mapping could be accomplished more effectively by using the advanced capabilities of military mapping centers in the United States. It was also recognized that detailed on-site information available to field units should be incorporated into maps provided to them.

On-site topographic information, which exists in general forms, is most useful in graphic form. Thus, a separate graphic for each individual terrain element (factor) affecting military operations should be prepared. When accomplished at the lowest level, individual factor overlays are combined to assist the military geographic intelligence specialist in making rapid analyses of the effect of terrain on tactical military activities. A good example of this approach is the problem of cross-country tank movements. By weighing existing terrain conditions against the degree of slope tanks can climb, the size of trees they can knock down, the spacing of trees required for passage, and the ground pressure they exert, a specialist can quickly and accurately delineate areas of relative mobility. The completed cross-country movement data can then be overprinted on a standard topographic map in a distinctive color, and produced in sufficient quantities for use by planners, unit commanders, and tank operators.

The ideal way of implementing such a concept is to have on-hand a data bank of various factors in graphic form. However, since there are so many factors that have the potential to affect military operations, the cost of preparing such a worldwide data bank is prohibitive. Therefore, the initial task of field topographic units will be the creation and maintenance of a data base of factors pertinent to their particular areas of deployment. From this data base, field units will be able to produce mission-oriented graphics rapidly in response to requests.

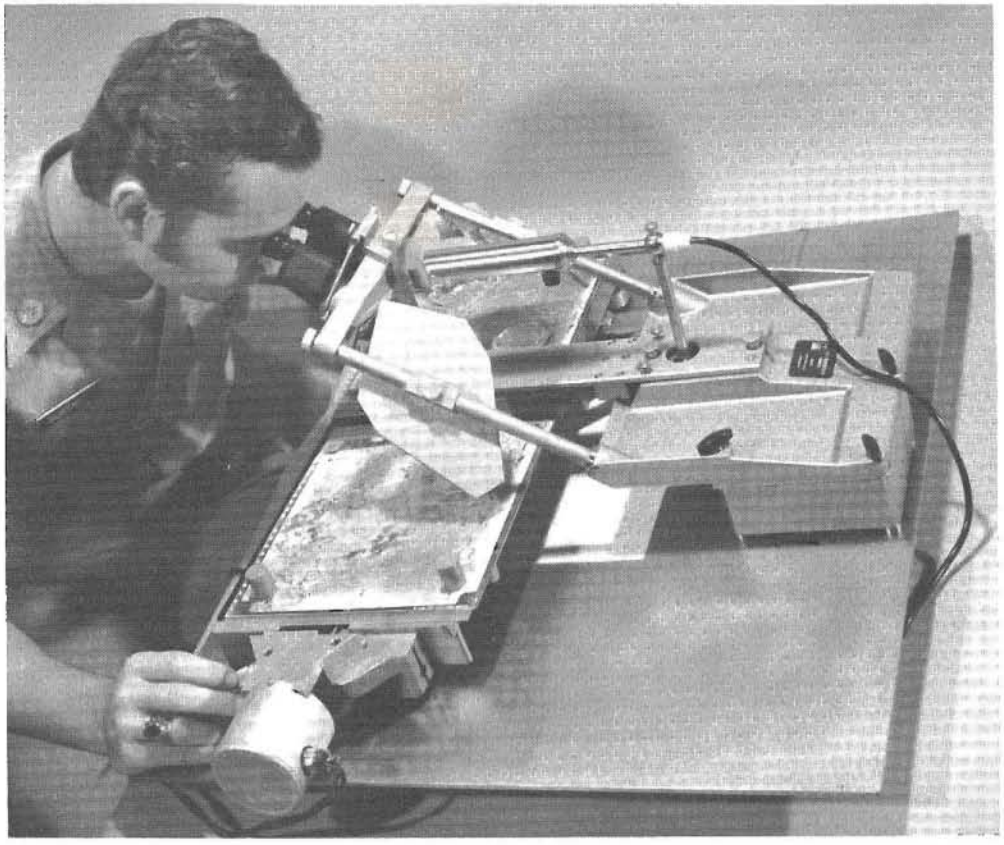
The effective use of this new approach depends upon the degree of improved communication between tactical unit commanders and the command and control elements of topographic units. Rather than depend upon G-2 or S-2 sections of tactical units to obtain maps for planning and operations, procedures must be established to keep topographic units aware of planned operations and anticipated problems. Destinations, required travel times, and the nature and number of vehicles are examples of pertinent information that should be considered in order to guarantee timely production of the best possible topographic support products.

Doppler positioning equipment permits a high degree of accuracy in determining three-dimensional positions of points on the earth's surface

To paraphrase the poet .philosopher Santayana, those who refuse to heed the lessons of history are doomed to repeat it. The new topographic support system is actually a modern refinement of the Army's topographic support system at the end of World War I. Allied maps in existence at the onset of World War I can be compared with the current holdings and production capability of military mapping centers. The modern concept of mission-oriented supplementary graphics overprinted on basic general purpose maps can be considered a sophisticated follow-on of the battle maps of the First World War. The interim phase, when Base Topographic Battalions evolved into mini-base plants, has been abandoned due to a lack of mobility and technical difficulties experienced in producing field-hardened versions of highly complex instruments used in modern map production plants.

To fulfill requirements of the new concepts, fundamental changes have been made in the organization of field topographic units. First, they will work from the basic family of products produced by various U.S. military mapping centers and will not participate in original mapping. Second, and probably most significant, they will incorporate the military geographic information functions as inherent parts of their organizations. Since World War II, these functions have been performed by separate terrain intelligence detachments.

From the management viewpoint, the headquarters element of the newly organized topographic battalion will be expanded to include technical experts in the



Using data generated in military mapping centers, the operator can determine position and elevation of any point of interest on the data base photographs. Points of interest on reconnaissance photos can be transferred to the data base

field of surveying, cartography, photogrammetry, military geographic information, and reproduction. This technical staff will know the status of the current workload and data holding in each technical subsystem. Thus, when a request for topographic data to support a tactical operation is received, these technical experts will be able to propose alternative topographic products or services, along with estimated response times, that will meet the tactical commander's needs.

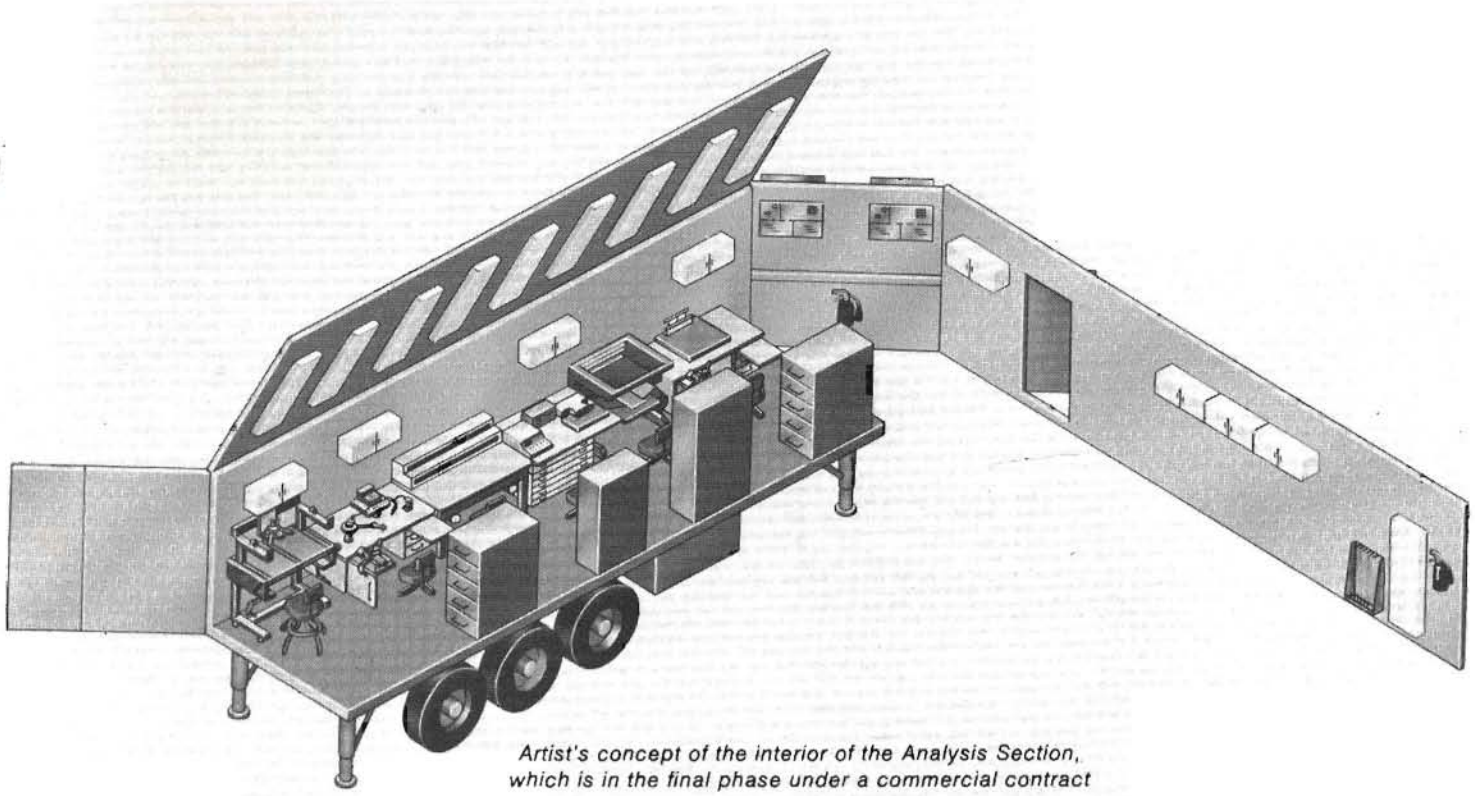
To implement the new concepts, the topographic battalion will be furnished with a modular, mobile and evolutionary topographic support system: modular, to permit variations of configuration as a function of the physical environment and combat situation; mobile, to maintain contact with tactical forces at the lowest possible echelon; and evolutionary, to keep pace with advancing technology.

The surveying section will include a point positioning capability based on classical, analytical photogrammetric techniques. This is another example of utilizing the extensive technical capabilities of U.S. military mapping centers to assit field operations. In these centers, blocks of photographs are measured, and the absolute position and orientation of each individual exposure is determined. The results are expressed in matrix form on magnetic tape, which can be used in a small desktop computer. A simple stereoscopic measuring system is used to determine photographic coordinates of unknown points on two different exposures, which are converted to ground coordinates by using the absolute orientation matrix. Data bases of photographs and their associated orientation parameters are prepared routinely for field users. In addition, ground equipment that uses satellite signals to determine absolute ground position is included in the system. Modern, more conventional field instruments, including those which combine optical angle measuring with electronic distance measurement, are included as insurance for the more sophisticated instruments.

The cartographic revision section will prepare final drawings and reproduction materials for special purpose graphics, draft and revise drawings of individual factors used for the preparation of special purpose products, and prepare reproduction material for the interim revision of general purpose products. Three types of equipped vans can be deployed in a variety of combinations to provide sufficient work areas and items of equipment to accomplish any cartographic operations required. There is nothing radical in the types of equipment, since the final rendering of graphics will remain a manual operation. However, the most advanced commercial products will be used throughout.

The old workhorse—the reflecting projector—will be replaced by a modern stereo zoom lens transfer instrument, which in addition to duplicating the scale change parameters of the reflecting projector, has a controlled distortion capability to improve the fitting of details on reconnaissance photographs to the maps being revised. Production will also be increased by the introduction of coordinatographs for the preparation of grids and projections.

The major source of data for the cartographic revision team will be the military geographic information analysts. Formerly, small detachments operated out of tents to gather data; now data are gathered by a group of 25 specialists working out of five different vans. Four vans, dealing with collection, analysis, synthesis, and information storage, will be deployed with the main body of the battalion, while the fifth will be truck-mounted for increased mobility, and will be deployed for direct support at lower echelons, typically at division level. The direct support group will, as the



Artist's concept of the interior of the Analysis Section, which is in the final phase under a commercial contract

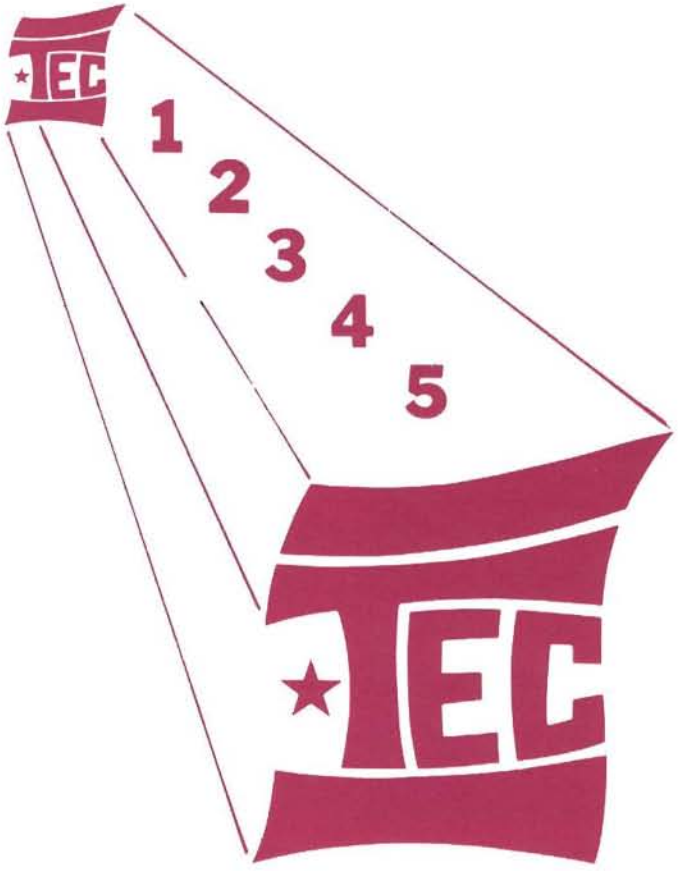
name implies, interface directly with tactical units, dispensing as well as gathering data. Analysts will continually convert new data to a graphic format to be sent back to the cartographers for final processing. Completed factor graphics will be stored in a separate storage and retrieval element, which will maintain holdings and send periodic notices to all concerned personnel, so that everyone knows what information is available.

Personnel and instruments for producing products based on photographs and other forms of continuous tone imagery will be consolidated in another group. Three different configurations of vans are included. One van will house all photographic laboratory equipment, including printers and a frame rectifier. Another van will contain work areas and equipment to assemble photomaps and perform associated drafting. The other van will be used mainly for storage, but will also contain a duplicate of the analytical photogrammetric positioning system to generate control point coordinates for the subsequent rectification of photographs. Light tables, files, and miscellaneous items necessary for handling photographs will also be included. In practice, this element will prepare prints for interpretation by the analysts and will assemble or mosaic photographs to serve as a basis for hasty products requiring different scales or sheet lines than the standard general purpose products.

The reproduction section is housed in several functional vans. To avoid difficulties caused by variations in temperatue and humidity, a separate paper-conditioning van has been included. Original copy will be processed in the camera van, which contains a 30-inch process camera. A layout section is provided to assemble and check incoming reproduction materials, and a photomechanical van will produce proofs or actual copies for distribution when the request is too small to utilize the press facility economically. All plate processing equipment will be in a single van. The combined capabilities of these sections will provide input to four press vans for high-volume reproduction. A finishing section, which will cut, bind, and wrap the completed products, completes the entire reproduction subsystem. A change from the previous organization is the elimination of reproduction material files. These are maintained in the storage and retrieval section, which will also maintain the completed factor graphics and film library. Thus, reproduction materials will be available, together with other graphic and imagistic data, to all functional subsystems.

The major thrust behind this system development is to provide commanders of tactical topographic units with an improved capability as soon as possible, so they can increase their support for commanders of combat units. To achieve this, only commercially available and reliable items of equipment are being included in the system. Parts of the reproduction subsystem have been fabricated and subjected to preliminary tests by topographic troops. Components of the remaining subsystems have been selected and preliminary layouts have been prepared in anticipation of a commercial fabrication contract early in 1980. The first complete system is expected to reach field units in Europe in early 1982. At that time, the new look in field topographic support will be a reality—the first major change since World War II.

COL DANIEL L. LYCAN is commander and director of the U.S. Army Engineer Topographic Laboratories, Fort Belvoir, VA. MR. VAL E. SELLERS is a project engineer at the Topographic Laboratories. He is assigned to the development team for the Topographic Support System described in this article.



5 Years Later

A significant aid to the improvement of individual efficiency and unit effectiveness

by MAJ Charles F. Hanselmann & Jerry Perlmann

In 1971, the U.S. Army Board for Dynamic Training identified a critical need for a type of instruction geared to the needs of the individual soldier after he has finished his initial formal military training. After three years of research and development, the Training Extension Course (TEC) Program was introduced in 1974. TEC lessons were originally designed to assist in upgrading and maintaining MOS skill proficiency for combat arms soldiers. They are prepared by service schools to train individuals in the Active Army, Reserve Components, and Army-related activities such as ROTC.

TEC is an alternative to traditional group instruction where the soldier is required to participate regardless of qualifications and knowledge. The philosophy of performance-oriented training, training objectives, standard go/no-go testing, and validated lesson development is part of the overall TEC system. TEC is a vehicle for communicating critical "how to" principles, techniques, and methods of MOS/job performance training, while providing validated materials to train both individual soldiers and units.

TEC is closely integrated with and supports the Enlisted Personnel Management System (EPMS), the Soldier's Manuals, Skill Qualification Tests (SQT), and the Army Training Evaluation Program (ARTEP).

During the lesson development process, each TEC lesson is tested (validated) using soldiers from the lesson's target audience. If members of the test group fail the pre-test, the lesson is redesigned and retested until a representative sample of the target group can achieve the objectives of the lesson as indicated by passing the post-test.

The first step in taking a TEC lesson is to read the Lesson Administrative Instructions (LAI). The LAI outlines objectives of the lesson and the skills required to take the lesson, and provides the pre-test. The Student Instruction Sheet (SIS) included with the lesson states objectives, materials needed, and time required. TEC lessons are standardized. The pre-test is designed to reveal a soldier's proficiency or lack of proficiency in his MOS. TEC tests are conducted in real-world situations to give the NCO or officer a tool to measure soldier proficiency or unit proficiency, and to prescribe appropriate training applicable. If a soldier can pass the pre-test he can proceed to more advanced training without taking that particular lesson.

TEC lessons are pre-packaged and soldier-tested for the critical tasks connected with each MOS. TEC employs the latest developments in educational technology: empirical design (based on experience or observation instead of theory), "hands-on" performance, lesson validation trials, and various methods of media delivery or lesson format.

Most TEC lessons are presented in an audiovisual format with a special projector. The film and sound are programmed to stop automatically to permit the student to answer questions or perform a task; then the student can reactivate the lesson. All TEC equipment can be powered by a standard field generator and transported in protective carrying cases. The projector can be used by one soldier at a time (with or without earphones) or by a small group of soldiers. TEC hardware works well with 10kw or higher a.c. generator power. Eight projectors are normally issued to each battalion size unit and a smaller number to separate companies or detachments. TEC lessons cost about $7,800 to develop and each copy costs about $3.00.

Lessons which are more appropriate for use in a field or motor pool situation (i.e. hands-on training) are developed in audio-tape format. A soldier can listen to the tape on a standard portable cassette player as it "talks him through" the lesson.

A third form of lesson material is the programmed text. This is usually a soft cover booklet with instructions outlining the objective, materials needed, time required, references, and other information. The text is often illustrated. Each printed lesson contains instructions, questions, and answers in step-by-step format.

All TEC lessons are self-paced and designed to be given under field conditions. Lessons may be used during duty hours, non-duty hours, or any combination of both. They are ideal for make-up or equivalent training, or split drills, and they can be reviewed while waiting at the rifle range or in a truck or a tent.

mastered before the soldier moves on to the next step. The student does not compete with others. If the student does not get the right answer the first time, he is encouraged to repeat the process.

A study completed by the Army Research Institute (ARI) in January 1978 concluded that TEC is more effective than conventional instruction. TEC-trained soldiers retain what they learn. Eight weeks after TEC instruction, they performed better than soldiers who were tested one day after receiving conventional instruction. During limited evaluation, TEC users scored higher on SQT than soldiers who did not use TEC.

In addition to being more effective than conventional training, TEC training costs 16 percent less. It gives more information in less time. It teaches soldiers to do their jobs better and trains them for new skills which increase their chances for promotion. Soldiers learn

AVAILABLE TEC LESSONS IN ENGINEER MOS

SUBJECT	APPLICABLE MOS	NO. LESSONS AVAILABLE
Universal Trestle Assembly M4T6 Fixed Span	12B, 12C	5
Combat Engineer—Obstacles & Barriers	12B	9
Float Bridge/Raft M4T6 Assembly	12B, 12C	14
Combat Engineering Concrete Construction	12B	1
Reconnaissance/Terrain Analysis	12B	11
Mine/Countermine Operations	12B	7
Mobile Assault Bridge Operations	12B	12
Ribbon Bridge/Raft	12B, 12C	10
Bridge Anchoring Systems	12B, 12C	9
Water Sewage Specialist	51N	37
Mobile Assault Bridge Repair	62B	33
Engineer Construction Equip Troubleshoot	62B	2

TEC helps soldiers prepare for their SQT (Skill Qualification Test). Critical tasks required for the individual's MOS proficiency are in the Soldier's Manual. TEC lessons mentioned in the manual will help the soldier achieve the desired level of proficiency. Each lesson is designed to train a soldier to perform critical job tasks. TEC is used in basic and advanced individual and unit training. In many instances, it has replaced the huge classroom with an interesting, interactive, and challenging alternative.

Instructors can provide good training without expert knowledge in every subject. A squad leader with minimum advance preparation can use a TEC lesson as a training aid by stopping the lesson to ask questions or discuss major points. TEC reduces instructor preparation time and increases management responsibility.

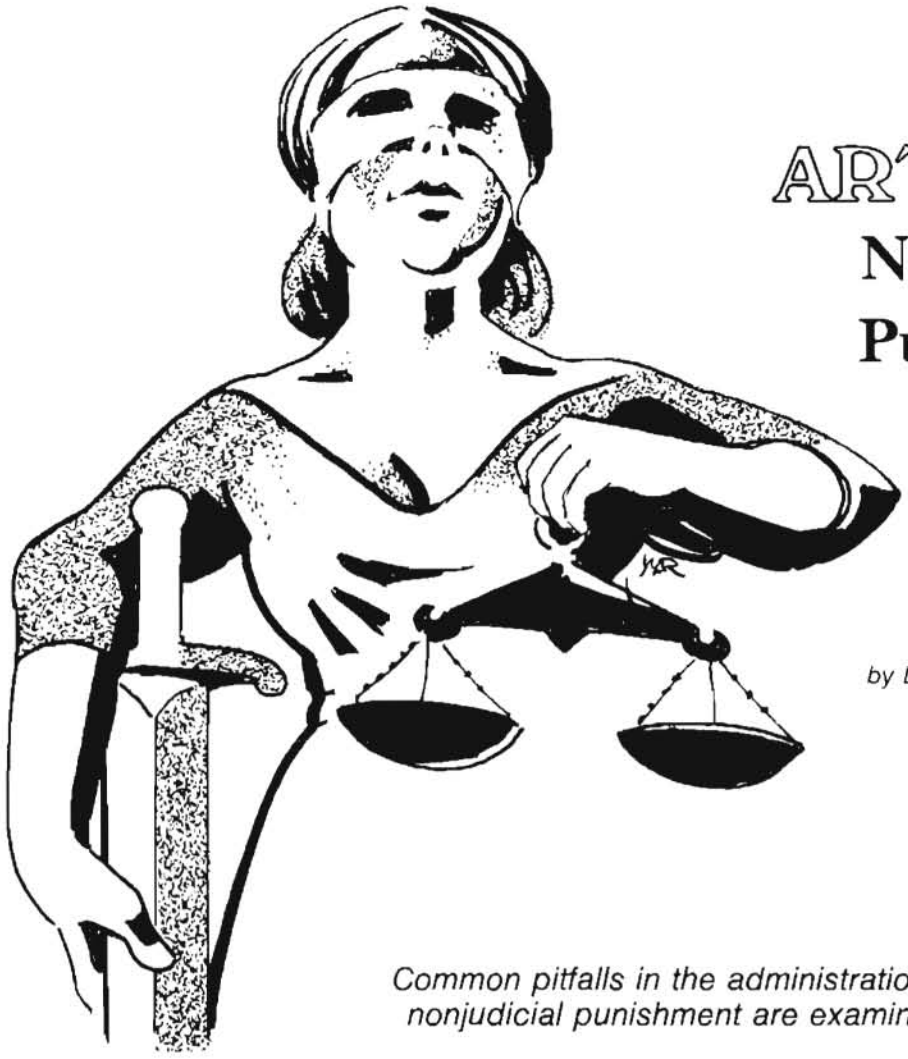
Experienced soldiers may complete a TEC lesson in 30 minutes, but time is unimportant if the soldier can pass the test. Lessons can be repeated as often as necessary to insure a high level of retention or as refresher training. After reviewing the lesson, a soldier is post-tested to determine his skills in his own MOS. He may also study other MOS lessons. Each lesson must be

faster, retain longer, and have a higher degree of motivation when they control their own rate of progress toward training goals. And the best training is that which most closely approximates real-world conditions.

There are several reasons why TEC is not used more often. Some soldiers do not know how to use the material, or do not consider it important. A surprising number of soldiers do not know that TEC lessons are available at almost every Army unit world-wide, and others do not have access to lessons during off-duty hours.

A TEC Lesson Availability List is distributed quarterly to all TEC account holders. The point of contact for more information about the TEC program is the TEC Production and Distribution Office, Autovon 927-4868, Fort Eustis, VA 23604.

MAJ CHARLES F. HANSELMANN and MR. JERRY PERLMAN are assigned to the TEC Implementation Management Office, U.S. Army Training Support Center, Fort Eustis, VA.



ARTICLE 15
Nonjudicial Punishment

by LTC Steven Chucala

Common pitfalls in the administration of nonjudicial punishment are examined

Article 15 of the Uniform Code of Military Justice (USMJ) is one means available to the commander to correct undesirable behavior, administer punishment, and perhaps deter others from similar misconduct. Occasionally, it is improperly applied, resulting in a loss of confidence by subordinates in both their superiors and the military justice system. Such an unfortunate situation is created without malice by an unwary commander and it may innocently go undetected in the midst of day-to-day burdens of command.

This article presents six key areas which have historically been pitfalls in the administration of nonjudicial punishment. The information is of value to the commander, the accused, and the soldier at large.

CRIMINALITY

Article 15, UCMJ, concerns only acts of criminal conduct. As a simple rule, only acts recognized by the UCMJ as criminal may be the subject matter for nonjudicial punishment. Punishment of non-criminal conduct is not authorized by this proceeding. Additionally, care must be taken to insure that the crime applies to the accused soldier. An example of improper application is Article 133, UCMJ, Conduct Unbecoming an Officer, being applied to an enlisted member under the title of Conduct Unbecoming and Enlisted Man.

Another common mistake in Article 15 proceedings is the failure to state an offense. This commonly occurs when words of criminality or wrongdoing are omitted from the declared misconduct. Examples are such charges as "absent from place of duty" and "leaving the scene of an accident." In order to make these acts criminal in nature, words must be included in the charge that declare absence from a duty station or leaving the scene of an accident unlawful. Merely being absent from a place of duty is not criminal. Nor is leaving the scene of an accident a crime if you were simply a spectator.

To preclude such errors and to insure that acts of criminality are being disposed of, the offense should be in the form and language used for court-martial charges. Should the accused reject Article 15 punishment, the offense as written may then be used as the specification on a charge sheet with minimal effort.

JURISDICTION

In 1969, the Supreme Court of the United States, in *O'Callahan* v. *Parker,* prohibited military criminal jurisdiction over major offenses committed off post in the United States when no service connection is involved. The prohibition does not apply to *minor* offenses, which are generally defined as those punishable by confinement for one year or less. Accordingly, the exercise of Article 15 jurisdiction over offenses that cannot be prosecuted in military courts presents a serious matter for consideration by commanders. Close coordination with the local Staff Judge Advocate is recommended, since a soldier may reject Article 15 and request trial by court-martial, thereby eliminating the offense over which his

commander may exercise judicial disposition. A commander should be able to prefer charges and seek prosecution when confronted with a rejection of nonjudicial punishment. The inability to do so in a given case may adversely affect his disciplinary authority.

A similar situation occurs when a commander acts on a case supported only by evidence which would not be admissable in a court of law. Examples include evidence obtained by illegal search and seizure, incriminating evidence without a proper warning, and waiver of rights by the accused/suspect. Regardless of the type deficiency presented, an educated evaluation is required, and a decision should be made with potential consequences in mind. The prudent commander will determine the probability of sufficient evidence with which to forward a case to trial and, if it is lacking, not offer Article 15 to an accused.

INNOCENT UNTIL PROVEN GUILTY

The service member has the right to reject Article 15 and to request trial by court-martial. In most instances, the member accepts the Article 15, but his acceptance should not be construed as a guilty plea. It is simply an election of the forum which will determine the facts and, if guilt is established, impose punishment. This understanding is critical to the entire process and ties in with the accused's right to present evidence in defense, extenuation, or mitigation. The officer imposing the Article 15 must consider all evidence and determine guilt "beyond a reasonable doubt." Accordingly, acceptance of the Article 15 must not be treated as admission of guilt.

Similarly, it is improper to advise the service member of punishment to be administered before he makes his election and has the opportunity to present evidence. Such action demonstrates a predisposition toward guilt and punishment. Telling the accused of the specific punishment in mind is a method used by some commanders to urge acceptance of the Article 15 for a variety of reasons, including a weak or nontriable case. No matter how innocently committed, the impression and perception of a fixed frame of mind is presented to the accused and other personnel. Although the Article 15 officer may have thoughts about prospective punishment, those thoughts should not be communicated prematurely to the accused. However, the maximum punishment, in the event of a guilty finding, may be stated to the accused to help him determine whether or not to accept the Article 15.

SEE COUNSEL

The Article 15 officer must adivse the accused of certain rights, including his right to consult with an attorney of the Judge Advocate General's Corps. If the accused elects to waive all rights, the Article 15 officer may administer the Article 15 without delay. However, it is advisable to refrain from exercising the authority immediately, and to advise the accused to consult with an attorney and return within 72 hours. Thus, the appearance of perception that the accused was "railroaded" will be avoided.

Too often, the punished service member of an on-the-spot Article 15 returns to his comtemporaries and explains away his guilt by alluding to the action as an unfair proceeding when, in fact, he admitted his guilt and solicited immediate action. Despite a swift disposition of the case, the result may be an unspoken indictment of the military justice system and the commander by his subordinates. Consultation with a Judge Advocate attorney will permit the accused to receive proper advice. Issues of jurisdication and evidence will also be discussed to permit an intelligent consideration for either rejecting or accepting the Article 15.

APPEAL RIGHTS

Assuming the accused is found guilty and punishment is imposed, he has the right to appeal to the next superior commander in the chain of command of the Article 15 officer. Generally, 15 days is considered enough time for filing an appeal. The soldier receiving punishment should be aware of the implications of appealing punishment which restrains his liberty. For example, an unsuspended restriction for seven days which begins on the date of announcement will be served in its entirety if the appeal is filed on the 10th day. Should the appeal result in favorable consideration as to the restriction, the soldier will have already served the punishment and no recourse for relief is provided. However, if the soldier is aware that an appeal will postpone the imposition of restraint type punishment until appellate review is completed, it places the burden upon his shoulders to expeditiously exercise his appeal right.

The postponement of punishment until completion of the appeal process is known as "tolling the punishment." Tolling applies only to punishments of restriction, extra duty, and correctional custody. It does not apply to punishments such as reduction in grade, deferment of pay, and forfeitures since the punished individual can be made whole if the appeal is in his favor. The accused has basically three avenues of appeal: the appeal may be unspecified, that is, without a specific objection; it can be based upon his continued insistance of innocence; or, the accused may appeal on the basis that punishment is disproportionate to the offense committed.

EXTRA TRAINING VS PUNISHMENT

A soldier who cannot perform military tasks expected of him is lawfully expected to train until the duties can be performed satisfactorily. This training may occur during or after duty hours. However, extra duty for training must be normal training for the task deficiency in question. The commander and NCO must avoid prohibited punishments camouflaged as training or volunteer work, i.e. ordering a road march for soldiers with dirty weapons.

With one exception, all punishments must be incident to a formally recognized system, such as Article 15, UCMJ, and court-martial. The exception is on-the-spot corrections/punishments ordered during basic training.

The desire to punish off-the-record is real in view of the requirement that *all* Article 15 non-minor punishments become a permanent part of every soldier's Official Military Personnel File (OMPF). Accordingly, commanders and NCOs must comply with existing directives regardless of their desire to shelter a soldier. Limitations on extra duty for punishment, versus training, is declared in Change 5, paragraph 5-6, AR 600-20.

The proper administration of nonjudicial punishment and the avoidance of misconceptions and false perceptions by service members about the military justice system and the commander are just as important as correcting individual criminal behavior. A prudent rule-of-thumb is to perform all duties in a manner which sets an example for others to emulate. Although it may seem unlikely, the administration of an Article 15 exemplifies a commander's integrity, which, in turn, influences troop morale and discipline.

LTC STEVEN CHUCALA is the chief of the Command and Support Division, Department of Combined Arms, Directorate of Training, U.S. Army Engineer School, Fort Belvoir, VA.

PROFESSIONAL DEVELOPMENT

Are the Army's needs for Military Engineers being fulfilled? What "tuning" of the Officer Personnel Management System is necessary to support these needs? How can we solve the professional development dilemmas confronting the Engineer specialty and further enhance its Combat Arms status? These are a few of the complex issues being addressed by a study task force comprised of officers from the Military Personnel Center, the Office of the Chief of Engineers, and the Army War College.

Initiated last fall as a result of concerns expressed by the Chief of Engineers, the group was charged with searching for viable career paths for engineers while recognizing the critical underalignment of engineer officers in grades 0-3 and up, the continued importance of success in troop unit positions, the increased demands for experience in the civil works area, and more emphasis on Professional Engineer registration. The study group is investigating parameters such as officer distribution plans, the centralized selection system, accession and retention of engineers, special career situations (topographic and aviation), and ongoing actions that would impact on the study (RETO, Division 86, DOPMA, and the DOD Proposed Retirement Plan).

The study group expects to formulate recommendations for consideration by the Chief of Engineers, MILPERCEN, and ODCSPER by June. The point of contact for further information is Major C. H. Dunn or Captain Dave Schnable at MILPERCEN (Commercial 202-325-0250/1/2 or AUTOVON 221-0250/1/2).

OER TRAINING PACKAGE

A self-study training package on the new Officer Evaluation Reporting System is now available. Known as AG Subcourse 15, it provides objectives, instructional material, and self-evaluations for the tasks involved for each member in the rating chain. A separate training package on the same subject has been developed for soldiers in MOS 75Z and 75D who are tasked with administering the new system. Both packages are available from the Army Institute of Professional Development; US Army Training Support Center; Newport News, VA 23628. Interested personnel should use DA Form 145 to obtain either package.

SENIOR RATER'S RESPONSIBILITY

The ability to draw upon the knowledge and experience of senior officers within each rating chain is a major feature of the new Officer Evaluation Report (OER).

This development will place greater evaluation and final review responsibilities on senior officers in a rating chain. These "senior raters," though removed from immediate supervision, will be acutely aware of unique organizational factors surrounding the rated officer's performance.

Increased organizational perspective and additional experience enable the senior rater to consider and compare a wide range of officers. At the same time, he is less likely to consider personality traits or personal relationships and rely more heavily on how an officer's performance fulfills the overall needs of the organization.

Reflecting the change in concept, the titles of the rating officials have been changed from rater, indorser, and reviewer to rater, intermediate rater, and senior rater. These changes aren't necessarily a one-for-one replacement for those previously used.

The rater is the first person designated in the rating chain and is usually the immediate supervisor of the rated officer. The senior rater is then selected according to the formula in Figure 1.

And both the rater and senior rater have been designated, if there is an intermediate level of supervision between them, an intermediate rater will also be designated.

As an example, in a typical battalion, company commanders would most likely rate their platoon leaders, with the battalion commander serving as the senior rater. For most platoon leaders, there will probably be no intermediate rater.

THE FORM

The senior rater's evaluation responsibility focuses on the rated officer's potential in comparison with a sample population of 100 officers of the same grade. This evaluation is recorded by placing an "X" in the appropriate box in the left-hand column of Part VIIa of DA Form 67-8 (OER) as shown in Figure 2.

While there are no quotas or rigid requirements placed on the senior rater's evaluation, logic imposes its own constraints on the number of officers who can be rated in any particular block. For example, it is extremely unlikely that all of the officers rated by a senior rater will always be one in a hundred. Therefore, the senior rater who consistently places all of his officers in the top box is distorting the system and simply not supplying the Department of the

FIGURE 1

RATED OFFICER	MINIMUM GRADE OF SENIOR RATER
Warrant Officer Second Lieutenant First Lieutenant	Major or GS-14
Captain	Lieutenant Colonel or GS-14
Major	Colonel or GS-15
Lieutenant Colonel	Brigadier General, or Colonel, or GS-16
Colonel	Major General, Brigadier General or GS-17
Brigadier General Major General	Senior to rater and Intermediate rater

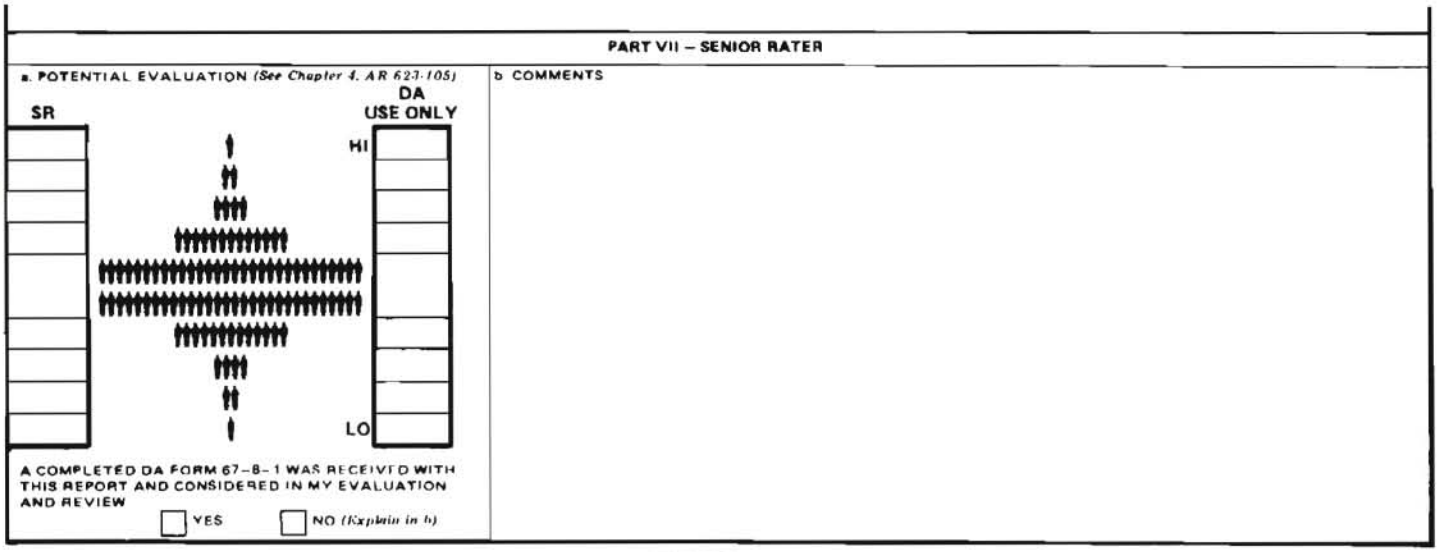


FIGURE 2

Army with credible rating information.

In making this evaluation, the senior rater uses all available means to gather information: his knowledge of the rated officer's performance, records, and information from other rating officials including their evaluations on the OER. Perhaps the most important source is the Support Form (DA Form 17-8-1), written by the rated officer himself and submitted to the rating chain. The senior rater indicates by checking a block in Part VII of the OER whether or not the Support Form was received and considered in the evaluation.

After evaluating the rated officer's potential, the senior rater reviews the entire OER and makes any comments on performance, potential, or any other pertinent points. The OER is then forwarded through the MILPO to MILPERCEN and the Support Form is returned to the rated officer.

THE RATING PROFILE

When MILPERCEN gets the OER, it adds a rating history or profile of the senior rater to the box in the right-hand column of Part VIIa. This profile shows exactly how the senior rater evaluated all the officers he had rated up to that time who were in the same grade as the rated officer. This profile enables selection boards and personnel managers to compare a given rating with the senior rater's general rating tendency. In doing so, the new system addresses the age-old problem of hard as opposed to easy raters. In addition, this profile will offer some protection to officers rated early in the new system in the event of general inflation later on in the life of the system.

The Senior Rater Profile Report (DA Form 67-8-2) is used to track the rating history of the senior rater at Department of the Army. The report will be prepared annually on senior raters who have rated at least five different officers. One copy of this record will be made available to the senior rater and another will be placed in his official military personnel file. This underscores the Army's commitment to the new OER by impressing upon officers the importance of their responsibilities as senior raters.

Assignment Officers

Pictured below are the Engineer Assignment Officers for the Active Army. From left to right, Lieutenant Colonel Art Williams, COLONELS (x7870); Lieutenant Colonel Ernest J. Harrell, LIEUTENANT COLONELS (x0423/4); Major Leonard W. Roth, MAJORS (x8108/9); Major John T. Lovo, CAPTAINS (x0650/1); Captain Robert J. Melchoir, LIEUTENANTS (x0650/1); and Chief Warrant Officer Aleck O. Fletcher, WARRANT OFFICERS (x7839). Telephone numbers have an AUTOVON prefix of 221 and a commercial prefix of 325 with Area Code 202.

ENLISTED CAREER INFO

NEW EER REGULATION

For the first time in its 20-year history, the Enlisted Evaluation Reporting System has its own regulation. AR 623-205, which became effective in January, is the new consolidated regulation that will govern the preparation and submission of enlisted evaluation reports. It replaces Chapter 8 of AR 600-200 and DA Pamphlet 623-1 and follows the same format as recently revised regulations for the Officer Evaluation Reporting System (AR 623-105) and Academic Evaluation Reporting System (AR 623-1). The new EER regulation was written to provide a single, easy-to-read, reference source for both individual soldiers and the managers of the Enlisted Evaluation Reporting System. The new reg consists of five chapters and three appendices.

E-3 PROMOTIONS

More E-3s can now be promoted because the Army has raised the ceiling on the number of E-4s within a command. Now, 70 percent of the total number of E-3s and E-4s assigned to a command may be in the grade of E-4. The previous limit was 65 percent.

If, however, a command finds it already has more E-4s than authorized, eligible E-3s with 18 months time in grade may still be promoted, according to the new policy. Waiver rules remain unchanged, while promotions to E-4 that are guaranteed by enlistment contracts or through the Stripes-for-Skills Program are exempt from the policy ceiling.

POWER LINE TRAINING

Engineer Branch, MILPERCEN, is looking for qualified volunteers to attend the Electric Power Line course offered by the Air Force at Sheppard Air Force Base, TX. Volunteers should have primary MOS of 51R, be in the pay grade of E5 or E6, have a physical profile of 111221, and possess pole-climbing ability. The course is eight weeks long and soldiers selected may attend in a TDY status and return to their parent unit or proceed thereafter to a new duty station. Applications should include the course number, J3ABR-54231-001, and be forwarded through the chain of command to MILPERCEN, ATTN: DAPC--EPT--F, 2461 Eisenhower Ave., Alexandria, VA 22331.

THE SRB

Retaining qualified and experienced soldiers in all MOS on active duty is the primary purpose of the Army's reenlistment program. Numerous options are made available to eligible enlisted through this program. For most MOS, enough soldiers take advantage of these reenlistment options to meet the personnel needs of the MOS. However, experience shows that, for some critical MOS, those options alone are not enough to insure the retention of sufficient numbers of qualified and experienced soldiers to meet the needs of the MOS. To increase the number of reenlistments in these critical MOS, the Selective Reenlistment Bonus (SRB) program was introduced.

Since 1 June 1974, when the SRB program became effective, more than 70,000 soldiers have received a Selective Reenlistment Bonus. Not every soldier is eligible for an SRB. Understanding who is eligible, how these bonuses are computed, and how a soldier whose MOS has no SRB can become eligible for such a bonus is essential for every soldier considering reenlistment.

Policies and procedures for awarding an SRB to an enlisted soldier are prescribed in Chapter 9 of AR 600-200, Enlisted Personnel Management System. The SRB is designed for flexibility. It is used to offer an attractive reenlistment incentive at any problem reenlistment point from 21 months to 10 years of active service. Under the SRB program, two reenlistment period "zones" have been established:

- Zone A—reenlistments between 21 months and six years of active service.
- Zone B—reenlistments between six and 10 years of active service.

Soldiers serving within their first 10 years of active service, who are qualified in designated critical MOS, and who reenlist or voluntarily extend their enlistments in the Regular Army for at least three years, may be paid bonuses not to exceed six times their monthly basic pay times the number of years of additional obligated service, or $12,000, whichever is less.

SQT UPDATE

Testing periods have been announced for 42 initial engineer SQTa and 14 revised SQTs. Many of the tests began as early as January 1979, while others will not begin until September 1981.

	MOS	TEST ADMINISTRATION PERIOD	
		Active Army	Reserve Components
SQT 2, 3, 4	12B/C/	Jan 79-Jun 79	Jan 80-Jun 80
	(2nd version)	Jan 80-Jun 80	Jan 81-Jun 81
SQT 2, 3, 4	62B		Mar 80-Sep 80
	(2nd version)	Mar 80-Sep 80	Mar 81-Sep 80
SQT 2, 3, 4	51M	Jun 79-Feb 80	Jun 80-Feb 81
	(2nd version)	Jun 80-Feb 81	Jun 81-Feb 82
SQT 2, 3	51G, 81B, 82B	Sep 79-Apr 80	Sep 80-Apr 81
SQT 2, 3	51R, (51N)*	Sep 79-Apr 80	Sep 80-Apr 81
SQT 2, 3	51B, 51C	Dec 79-Jun 80	Dec 80-Jun 81
SQT 2, 3	52D, (52C)*	Mar 80-Sep 80	Mar 81-Sep 81
SQT 2, 3	62E/F/J	Jun 80-Jan 81	Jun 81-Jan 82
SQT 2, 3	62G/H	Sep 80-Apr 81	Sep 81-Apr 82

*SQTs for 51N and 52C have been completed, but test administration has been delayed indefinitely pending resolution of some MOS structural problems.

ELIGIBILITY

To be eligible for a SRB, a soldier must meet all of the following criteria:

- He must be serving on active duty, other than active duty for training, in pay grade E-3 or above.
- He must be qualified in a primary MOS designated for an SRB. The MOS must have been designated as the soldier's PMOS at least three months prior to discharge/release from active duty or beginning of service on an SRB-qualifying extension.
- He must have at least 21 months, but not more than 10 years, of total active service at the time of reenlistment or extension.
- He must extend his enlistment or reenlist within three months of discharge or release from active duty for at least three years.
- He must have attained eligibility for the bonus prior to the effective date announced for termination of the MOS from the SRB program.
- He must reenlist for continued active duty in the PMOS held at discharge, except for reenlistment for award of or duty in an MOS within the normal career progression pattern for the PMOS held at discharge. In this case, the SRB assigned to the PMOS will be used, regardless of whether an SRB has been assigned to the MOS for which the soldier is reenlisting.

To be eligible for a Zone A bonus, soldiers must also meet the following requirements:

- He must have completed at least 21 months of continuous active service, other than active duty for training, but not more than six years of active service immediately prior to discharge, release from active duty, or beginning service on an extension.
- He must reenlist or voluntarily extend his enlistment in the Regular Army for at least three years. The reenlistment or extension, when coupled with existing active Federal service, must provide a total period of active service of at least six years.
- He must not have previously enlisted or reenlisted, beyond six years of active service, or begun an extension which, when completed, will provide more than six years of total active service.

To be eligible for a Zone B bonus, the following additional requirements must be satisfied:

- He must have completed at least six years, but not more than 10 years, of active Federal service immediately prior to discharge, release from active duty, or beginning service on an extension.
- He must reenlist or voluntarily extend his enlistment in the Regular Army for at least three years. The reenlistment or extension, when combined with existing active service, must provide a total period of active service of at least 10 years.
- He must not have previously enlisted or reenlisted beyond 10 years of active service, or begun an extension which, when completed, will provide more than 10 years of service.

ARMY ENLISTED PROMOTION CRITERIA, FY 80

FOR PROMOTION TO	MINIMUM TIME IN SERVICE	MINIMUM TIME IN GRADE***	SELECTION METHOD	SELECTION LEVEL	FREQUENCY OF SELECTION	LEVEL OF QUALIFICATION
Grade E-2	6 Mos*	—	Commanding Officer	Unit	Daily	Fully Qualified
Grade E-3	12 Mos*	4 Mos.	Commanding Officer	Unit	Daily	Fully Qualified
Grade E-4	24 Mos*	6 Mos	Commanding Officer	Unit	Daily	Fully Qualified
Grade E-5	36 Mos*	8 Mos	Semi-Centralized	Local Selection Board	Monthly	Best Qualified in MOS
Grade E-6	7 Yrs.**	10 Mos	Semi-Centralized	Local Selection Board	Monthly	Best Qaulified in MOS
Grade E-7	None Considered in Determining Zone	Announced in Zone	DA Board	Dept. of Army	Annually	Best Qualified by Career Management Field
Grade E-8	None Considered in Determining Zone	Announced in Zone	DA Board	Dept. of Army	Annually	Best Qualified by Career Management Field
Grade E-9	None Considered In Determining Zone	Announced in Zone	DA Board	Dept. of Army	Annually	Best Qualified by Career Management Field

*May be waived within constraints.
**Soldiers who meet the minimum time in service requirement are placed in the primary zone and those requiring waiver are placed in the secondary zone. Each month available promotions are determined by DA and cutoff scores are then announced allowing that number of promotions to be made.
***may be waived by one-half.

ENGINEER PROBLEM

Military history includes numerous examples of tactical operations which can be used for training today's soldiers. Described below is one example of an unsuccessful deliberate attack.

In March 1943, Great Britain's 201st Guards Motor Brigade carried out a night attack on a ring of hills held by the enemy as an outpost of the Mareth Line in Tunisia, North Africa. The hills stretched 1,000 to 2,000 meters beyond the Wadi Zess, a dry river bed with steep banks ranging from 1.5 to 10 meters deep.

Air reconnaissance revealed digging and wire, but did not reveal two dense mine-fields nearly 1,000 meters deep between the Wadi and enemy positions. Two nights were available for patrolling, but in order to retain the surprise element, no patrolls were permitted beyond the Wadi. As a result, the mine-fields were undetected prior to attack.

Enemy positions were approximately 6,000 meters from those of the British and overlooked all of the intervening terrain. Working With nine and a half hours of darkness, the British allotted one and a half hours to cover the long approach, and two and a half hours to cross the Wadi and capture the objectives. The plan was to use the remaining five and a half hours of darkness to open vehicle crossings over the Wadi, and to put support weapons, ammunition, and radio vehicles onto the objectives before first light.

The brigade attacked with two motorized battalions forward, each consisting of three motor companies and an anti-tank company. The assault of the right battalion, the 6th Grenadier Guards, is described below.

The 6th attacked with all three motor companies forward, but no troops available to occupy Point 117, a spur leading off from the other battalion's objective. There was no reserve.

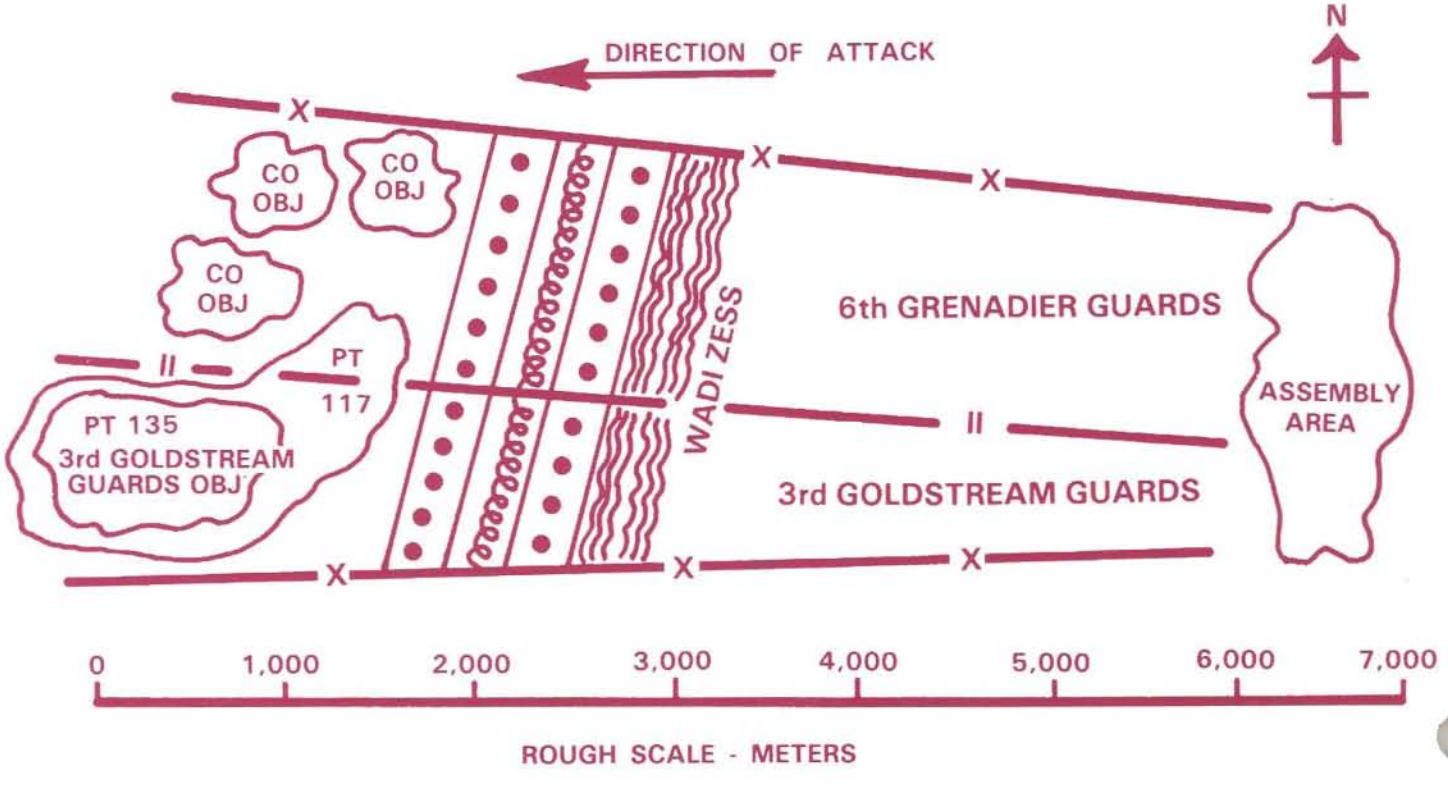
The 6th Grenadier crossed the Wadi on time and without incident. They immediately encountered the minefields beyond the river, however. The fields included antipersonnel mines "laid almost touching each other" and caused approximately 50 casualties within the first few minutes. But despite the mines, all three companies reached their objectives within the allotted time.

They were followed by an engineer force, whose task was to open a crossing over the Wadi for the antitank company and other support vehicles. By now, the enemy was firing heavily on the Wadi with mortars and machineguns from Point 117. Within an hour and a half, the engineers had crossed the river and breached the first strips of mines. British antitank guns and artillery forward observation vehicles (FOVs) started to cross. They immediately ran into more mines, which, coupled with direct enemy artillery hits, lit the area with blazing vehicles. All British FOVs were knocked out, as well as most of the antitank guns and personnel carriers. Dense belts of enemy mines prevented further attempts to move forward. All but two of the British sappers were killed or wounded.

Soon after first light, the three motor companies were ordered to withdraw under cover of smoke. The survivors of only two companies could be extricated. Casualties totaled 24 officers and 255 personnel of other ranks. Survivors were few.

What is the most significant conclusion which can be drawn from this historical account of a deliberate attack? And, in the light of current doctrine, what important considerations did the British overlook in their plan of attack?

See THE SCHOOL SOLUTION, page 40



NCO CHANNELS

As commander of the Noncommissioned Officer Education System (NCOES) Detachment, I have observed many soldiers reporting for the Advance Course who are deficient in basic academic skills (Math, reading, language). I find it necessary to solicit your assistance to insure that individuals nominated and selected to attend the Engineer Advance Course are given appropriate advice and guidance in preparing for this challenging step in their military careers.

Advance Course students must be screened well in advance of their reporting date to identify academic deficiencies and to take positive action to correct those deficiencies prior to their arrival at The Engineer School. I cannot provide a "cure all" to eliminate this problem, but the following suggestions may help you in defining the educational needs of soldiers selected from your battalions.

All students who report for the Advance Course must have a high school education, or its equivalent, but approximately one-third of all students fall below the 9th grade level in reading comprehension, math, language, and spelling. Some suggested actions to reduce these deficiencies are listed below:

- Unit education centers should conduct diagnostic testing for selected students to define skill deficiencies, and each center should develop its own program to satisfy student needs.
- Platoon sergeants and higher ranking NCOs must support their unit's education program and, if necessary, "use a big boot" to insure that personnel attend.
- The Basic Skills Education Program (BSEP) must have the support of all NCOs and junior enlisted personnel.
- All personnel should be informed of the off-duty educational opportunities, including the correspondence course system for professional development.
- Unit education goals should be set at the 12th grade level for E6s. Many of them were awarded GEDs years ago and have lost touch with basic academic skills.

Many students report to the Advance Course lacking knowledge of basic military subjects such as military justice, camouflage, map reading, and tactics. Key sections in the Soldiers Manual of Common Tasks which could help eliminate this deficiency are listed below:

- Individual Fitness, Skill Level 3
- Camouflage, Cover, and Concealment, Skill Level 1
- Land Navigation Skill Levels 3 & 4
- Leadership, Skill Levels 3 & 4
- Training, Skill Levels 3 & 4
- Tactics, Administration, Skill Level 4

For students who have recently been reclassified into an Engineer MOS, or who have been assigned to duties outside their primary MOS and have lost touch with engineer subjects, the following suggestions should help prepare for the Advance Course:

- Discuss engineer tasks and the combat engineer role in the combined arms team with experienced and knowledgeable NCOs and officers;
- Visit study activities where engineer subjects are available;
- Review Landmine Warfare, Reconnaissance, Field Fortifications, and Demolitions in Field Manuals, Training Manuals, and Soldiers Manuals. Recommend FM 5-34 as an excellent study guide in preparation for ENCOA.

Some students perceive that The Engineer School teaches advance course students how to fuse a mine, identify bridge parts, and other skills at Levels 1 & 2. In fact, some students actually ask, "What is a mine?" Basic material is taught in the Basic NCO Course and at unit level, not in the Advance Course. ENCOA has very little hands-on training. Students must already know basic bridge parts, types of mines, types of explosives, and they must be familiar with weapons and equipment that are common to combat and combat heavy units. It is disturbing that some engineer E6s with up to 15 years of active service cannot perform Skill Level 1 tasks.

Another problem involves weight standards. Approximately 20 percent of all ENCOA students are overweight when they report to The Engineer School. Some are grossly overweight. I hope you will caution your troops well in advance of their reporting date since a weight problem can become a matter of record on their Academic Efficiency Report. Students are required to achieve a passing score on the Staff and Specialist PT Test during the course.

I have addressed only the deficiencies of ENCOA students in this letter, but that does not mean that all students have problems. In fact, the majority of NCOs who arrive here are high quality and a tribute to their respective units. If you need additional -information or if I can offer further assistance in preparing your soldiers for ENCOA, please don't hesitate to contact me. Telephone commercial 703-664-1073, or AUTOVON 354-1073.

DELNORA RECTOR
1SG, USA
Commanding
NCOES Detachment
3rd Battalion, USAETBDE
Fort Belvoir, VA 22060

ENGINEER HOTLINE

If you have a problem relating to engineer doctrine, TOE organization, MOS, equipment, manuals, training, or training development, call the Engineer HOTLINE, Autovon 354-3646 or commercial 703-664-3646. Identify yourself by name, unit/activity, unit address, and phone number. Then simply identify the subject matter and problem. All information is recorded on tape and reviewed three times daily. Experts on the subject of your problem will be contacted immediately and tasked to respond by telephone, if possible, within three days or as soon as possible. Since HOTLINE was initiated by The Engineer School last July, an average of 16 calls per month have been received. If you have a problem, don't hesitate to call the Engineer HOTLINE.

RESERVE COMPONENTS

OFFICER ADVANCE COURSE

Two U.S. Army Reserve schools are scheduled to teach two phases each of the USAR Engineer Officers Advance Course this summer at Fort Belvoir, VA. Phases IA and IV will be taught 15–28 June by the 3288 USAR School of Greenville, S.C., while phases II and VI will be taught 6–19 July by the 1036 USAR School of Farrell, PA. Prerequisites for attendance at either session include the following:

- Membership in the US Army Reserve or National Guard
- A grade of first lieutenant or above
- Previous completion of any Officer Basic Course

Applications will not be accepted for phases previously completed or from personnel who have previously completed all requirements of the Engineer Officers Advance Course. In addition, applicants for phase IV must have, as a minimum, an Interim Secret Security Clearance, and applicants for phase IA must have a Confidential Security Clearance.

Applications for Active Duty for Training should be processed through normal command channels. Additional information or questions regarding enrollment should be addressed to: Commandant, US Army Engineer Center, ATTN: ATZA-DTR (Ind Tng Sec)), Fort Belvoir, VA 22060. Telephone Inwats 800-336-3095 (ext. 4095), commercial 703-664-4095, or AUTOVON 354-4095.

PROFESSIONAL ASSOCIATIONS

Most professional associations exist for the primary purpose of disseminating information about developments and issues of interest to their members. Among the professional associations available to members of the Army Reserve are the following:

- *Association of the United States Army*. Membership is open to all members of the US Army Reserve and includes a subscription to "ARMY" magazine. Address: 2425 Wilson Boulevard, Arlington, VA 22201.
- *Reserve Officers Association of the United States*. Membership is open to all officers of the USAR and includes a subscription to "OFFICER" magazine. Address: 1 Constitution Avenue, N.E.; Washington, D.C. 20002.
- *Enlisted Reserve Association*. Membership is open to all enlisted members of the USAR. Address: 1 Constitution Avenue, N.E.; Washington, D.C. 20002
- *Senior Army Reserve Commanders Association*. Membership is open to all senior commanders, deputy commanders, and chiefs of staff of USAR units. Address: % LTC Francis H. Bland, Secretary/Treasurer, 3101 Bardstown Road, Louisville, KY 40205.

CIOR COMPETITION

The Interallied Confederation of Reserve Officers (CIOR) is looking for officers and enlisted athletes to compete in the CIOR military skills competition in Montreal during the period 30 July–8 August. The competition will include running and swimming, rifle, pistol and submachine gun marksmanship, and orienteering. The U.S. will send a 24-man team of officers and enlisted personnel to compete against Reserve teams from 12 of the 15 NATO nations. CIOR applicants should be able to run five miles in less than 32½ minutes, swim 50 meters in 36 seconds, and do 10 pull-ups. Interested individuals should contact Captain Roger Harvey, USMPTC, Building 189, Fort Sam Houston, TX, 78234 for further information and application procedures. Application deadline is 20 March.

REPORTING CHANGES IN STATUS

Members of the US Army Reserve who have a change in address, marital status, number of dependents, or civilian employment are required to report those changes. Changes in physical condition that would prevent meeting prescribed physical or mental standards must also be reported. Non-unit Ready Reservists should report changes in writing to the Commander, US Army Reserve Components Personnel and Administration Center, ATTN: AGUZ-RMR-D, 9700 Page Boulevard, St. Louis, MO 63132. Changes in physical status should be addressed to office symbol AGUZ-RCH. Members of Troop Program Units should report changes to their unit commanders during scheduled meetings.

TRAINING REG CHANGES

FORSCOM Regulation 350–2, the Reserve Component's "bible" for training, will undergo major surgery between now and the end of the current fiscal year. The new document's proposed effective date is October 1.

To be cut from the current regulation will be as many appendices as possible. The basic document will also be pared down to allow Reserve Component commanders more flexibility.

USAR STRENGTH

U.S. Army Reserve strength has increased for the first time since the beginning of the All Volunteer Army era. Paid drill strength (PDS) increased from 185,753 to 189,990 in Fiscal Year 1979. The trend is expected to continue as a result of bonuses, full-time manning, split training, and full-time recruiters.

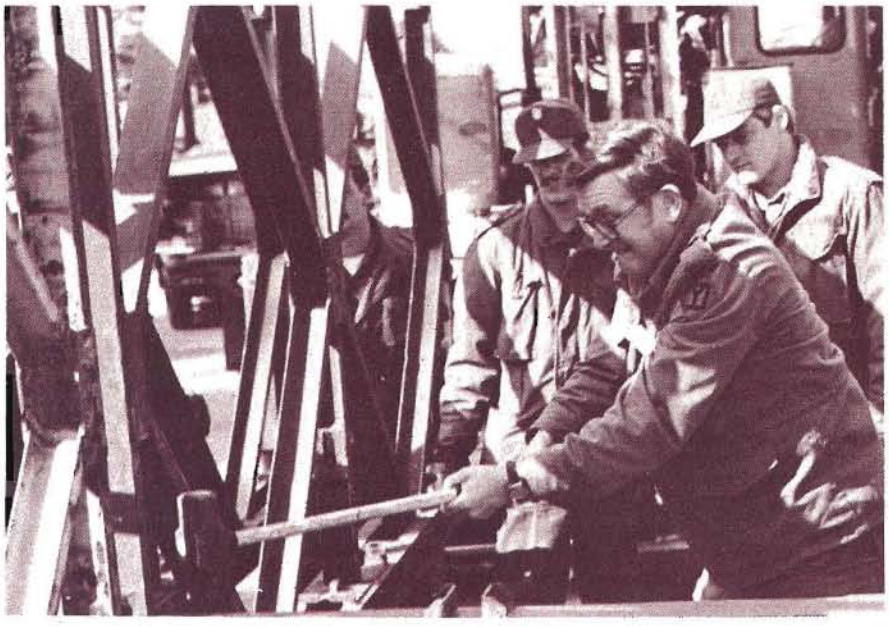
NG FULL-TIME PROGRAM

The Army National Guard's Full-Time Military Program was developed to enhance the readiness posture of selected ARNG units. It complements the technician program and seeks to remedy the current shortage of full-time personnel needed for a strong, effective National Guard.

The program has two distinct aspects: Conversion to Full-Time Military (CFTM) and Additive Full-Time Manning (AFTM).

CFTM concerns vacant technician positions designated to be filled by full-time military personnel. Any vacant position not designated to be filled by merit promotion can be filled by a Guard member in a full-time military status, provided the member meets the requirements for such duty. A CFTM person occupies a TOE position within the assigned unit and is eligible to compete for unit positions and promotions.

The local unit has the option to fill all authorized full-time positions. Priority will usually be given to unit members, other Guard members, and active Army, in that order. Initial projections suggest that active Army personnel will fill ap-



Platoon Sergeant Richard McBain drives home a connector on a Bailey Bridge which his Massachusetts National Guard Unit—Company B, 101st Engineer Battalion, 26th (Yankee) Infantry Division—constructed recently as a temporary replacement for the condemned Pearl Street Bridge in Lowell, MA. More than 75 citizen-soldiers of Company B and Headquarters Company turned out for the weekend training and community assistance project. (Photo by SP5 Thomas J. Spisak)

proximately one percent of the available positions.

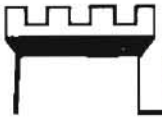
Only CFTM personnel will occupy unit positions. The unit commander exercises command supervision over all full-time members of his unit, and the commander or a designee rates and/or evaluates full-time personnel the same as other members of his unit.

Additive Full-Time Manning allows additional full-time personnel to be attached to selected units in order to improve their readiness.

AFTM personnel are assigned duties compatible with their MOS. They work for the unit commander but do not occupy a TOE position. They must attend unit drills and annual training in addition to carrying out their daily work assignments. AFTM personnel are assigned at state level and serve under Title 32 U.S.C., which places authority for control of the vast majority of full-time military personnel under the state adjutants general.

Persons entering active duty under the Army National Guard's Full-Time Military Program will be entitled to most of the benefits and privileges of Active Army personnel.

The program is expected to be ongoing, and to offer career opportunities for advancement and retirement.



THE SCHOOL SOLUTION

The most significant conclusion to be drawn from the night attack of Great Britain's 201st Guards Motor Brigade in March 1943 is that an antipersonnel minefield should not be able to stop a well-planned, determined attack by first class infantry.

Several breaches of current doctrine are obvious. The first principle of offensive operations is to "see the battlefield." The implication is that engineers help the tactical commander "see the battlefield" by conducting reconnaissance to provide information on obstacles. In this case, reconnaissance was not conducted for security reasons. Thus, the British brigade had no knowledge of the minefield before the attack. If possible, troops who conduct the breach should be those who conduct the reconnaissance.

The failure to breach the minefield was due to the lack of adequate breaching resources. Regardless of reconnaissance operations, engineer resources must be placed when and where a requirement is likely. One must plan for the worst, i.e. all contingencies.

Before an obstacle breach can be attempted, enemy weapons must be suppressed. Because enemy weapons on Point 117 (10 machineguns) were not suppressed, the breach was attempted under very heavy direct fire.

Although darkness was used to screen enemy observation, the breach was not completed by first light. The effectiveness of enemy weapons, greatly increased, of course, as soon as the enemy was able to observe the breaching operation. Smoke should have been used to obscure the enemy's observation in daylight. With smoke, the breach attempt may have succeeded.

The far side of the obstacle was not completely secured, as it should have been under current doctrine. That does not mean that a deliberate breach can be conducted *only* after the far side of an obstacle is secured. But, after the British infantry had gallantly and successfully crossed the minefield, not enough troops remained to secure Point 117.

Infantry must not be separated from heavy support weapons for long periods. Remember that Soviet defense doctrine requires a heavy armored force in reserve. The lack of heavy support weapons in this case prevented the infantry from withstanding the enemy counterattack.

SUMMARY

To summarize, the courageous British attack failed primarily due to a lack of reconnaissance prior to and during the attack. Other mistakes contributing to defeat were: the failure to suppress enemy weapons; the failure to use smoke to obscure enemy observation; the failure to secure the far side of the obstacle; and the failure to reduce the obstacle.

* U.S. GOVERNMENT PRINTING OFFICE 1980-0-620-274-1

ANNUAL ENGINEER DINNER

The 113th Annual Engineer Dinner will be held Friday, May 9, at Mackenzie Hall, Fort Belvoir, VA. Tickets are $12 per person and can be ordered in advance by sending a check or money order, payable to *113th Engineer Dinner*, to the Protocol Office, U.S. Army Engineer Center, Fort Belvoir, VA 22060. Ticket requests received by May 1 will be mailed. Requests received later than May 1 must be picked up at the Fort Belovir Protocol Office or at the door of Mackenzie Hall on the evening of the event. The Chief of Engineers, Lieutenant General John W. Morris, will deliver the main address. Presentations of the annual Itschner and Sturgis Awards will also be made that evening. The Counterpart Dinner for spouses will be held the same evening at the Main Enlisted Club. The Engineer Ball will be held Saturday, May 10, in the Mount Vernon Room of Mackenzie Hall. For additional information, call AUTOVON 354-4300.

The primary purpose of our arms is peace, not war—to make certain that they will never have to be used—to deter all wars, general or limited, nuclear or conventional, large or small—to convince all potential aggressors that any attack would be futile—to provide backing for diplomatic settlement of disputes—to insure the adequacy of our bargaining power for an end to the arms race.

John F. Kennedy