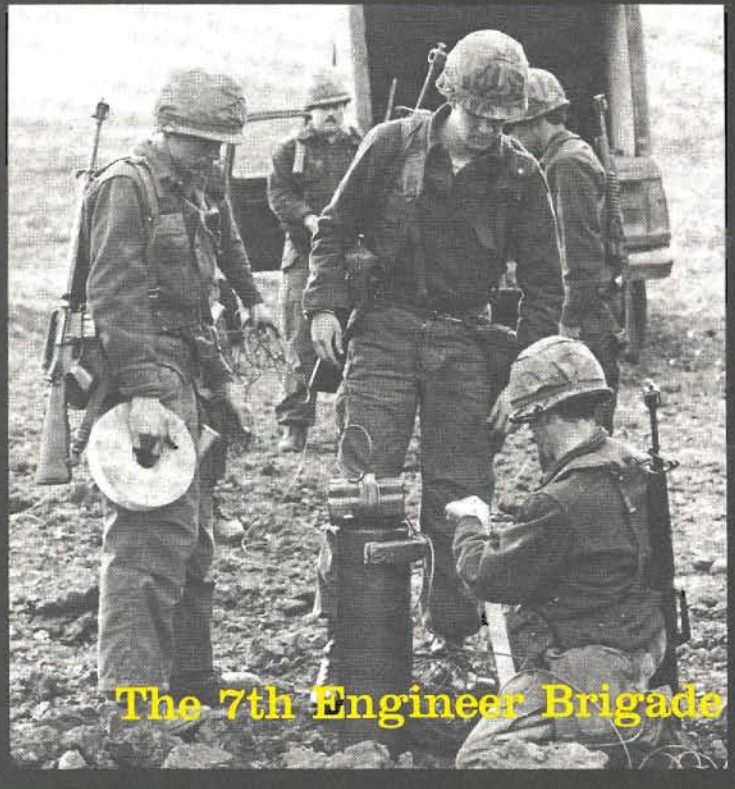
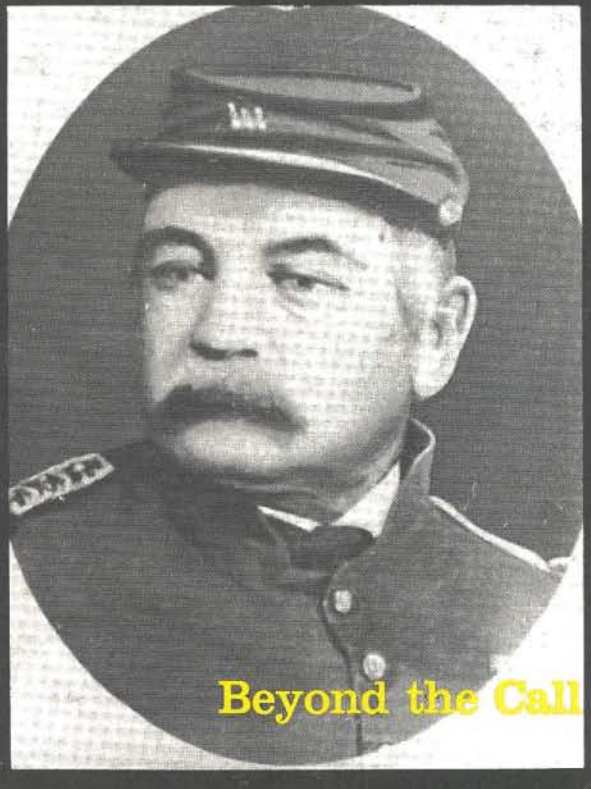
Engineer

THE MAGAZINE FOR ARMY ENGINEERS

SUMMER 1980



The 7th Engineer Brigade

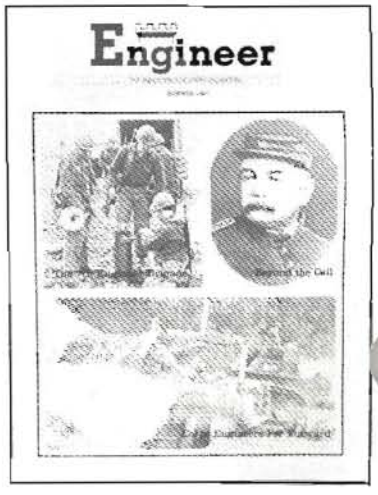


Beyond the Call

Corps Engineers Far Forward

THE COVER

Feature articles illustrated on the cover include *Corps Engineers Far Forward* (lower photo) starting on page 8, *Beyond the Call* (upper right) starting on page 24, and *The 7th Engineer Brigade* (upper left) starting on page 26.



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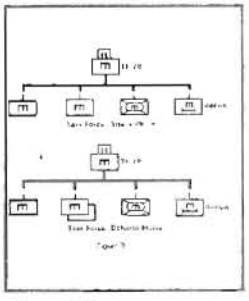
VOLUME 10 SUMMER 1980 NUMBER 2

FEATURES



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DEPARTMENTS

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News & Notes

SUCCESSFUL ARTEP

Construction of the two-lane Bailey Bridge above was one of many tasks accomplished by engineers of Fort Bragg's 27th Engineer Battalion (CBT) (ABN) and Fort Campbell's 20th Engineer Battalion (CBT) during a recent seven-day ARTEP at Fort Bragg, N.C. Most tasks were construction in nature, including the upgrading of the Fort Bragg firebreak system, construction of timber trestle bridges and culverts, and airstrip runway-improvements. Other ARTEP tasks included demolitions, route reconnaissance, bridge classification, and target folders. The 548th Engineer Battalion (CBT) of Fort Bragg provided professional support throughout the ARTEP.

ARMY ENGINEERS SUPPORT OLYMPICS

The 535th Engineer Detachment, headquartered at Fort Monmouth, N.J., played an active role in supporting the XIII Winter Olympic Games at Lake Placid, N.Y. The 535th, a field unit of the Facilities Engineering Support Agency (FESA), provided emergency electrical power for the Olympic Games on February 19 when commerical power went out on Mount Von Hovenberg and throughout the Lake Placid communications center. Enlisted engineers of the 535th activated three gas turbine mobile generators and kept them in use for 14 consecutive hours following the commercial power failure. Ten additional generators were manned by 535th personnel and could have been used, if necessary. The 17 Army engineers who participated in the back-up power operations included "teams" from West Point, Fort Belvoir, Fort Eustis, Fort Monmouth, and Fort Knox. Providing emergency power is a key element of FESA's mission. The agency is one of the Army's first lines of defense against prolonged power failure in critical areas worldwide.

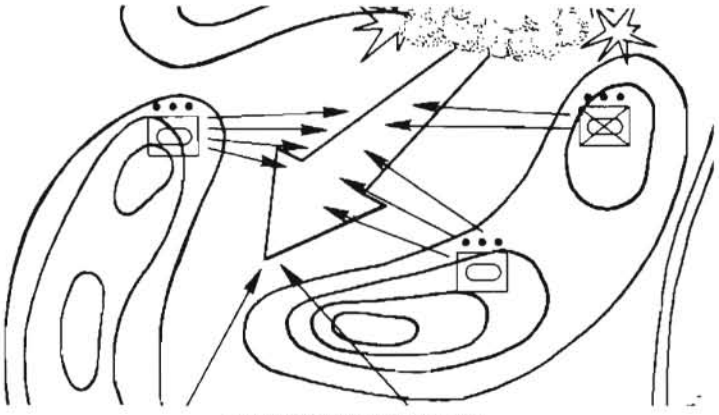
continued

HERO HONORED

Sergeant First Class (P) Martin Miller, a construction supervisor stationed at Fort Richardson, AK, recently received the Army's second highest peacetime service award for rescuing a drowning boy last year. Miller was presented the Soldier's Medal by Major General T.G. Jenes, Jr., commander of the 172nd Infantry Brigade in February. His heroic deed occurred in April 1979 during an ice-fishing trip at Six Mile Lake on Elmendorf Air Force Base when a friend's son fell through the ice. The boy's father dove in after him, but could find neither his son nor the only opening in the ice after being dragged by the heavy current. Miller jumped into the water and pushed both to safety. When he noticed the boy's breathing had stopped, Miller pounded the boy's chest and applied first aid. The boy finally resumed breathing and was rushed to the hospital, where he was treated for exposure and released. Miller, a 34-year-old native of Butte, MT, has been the NCOIC of the Directorate of Facilities Engineering at Fort Richardson for the past two years. He has worked as a crane operator, utilities foreman, and construction foreman during his 17-year Army career.

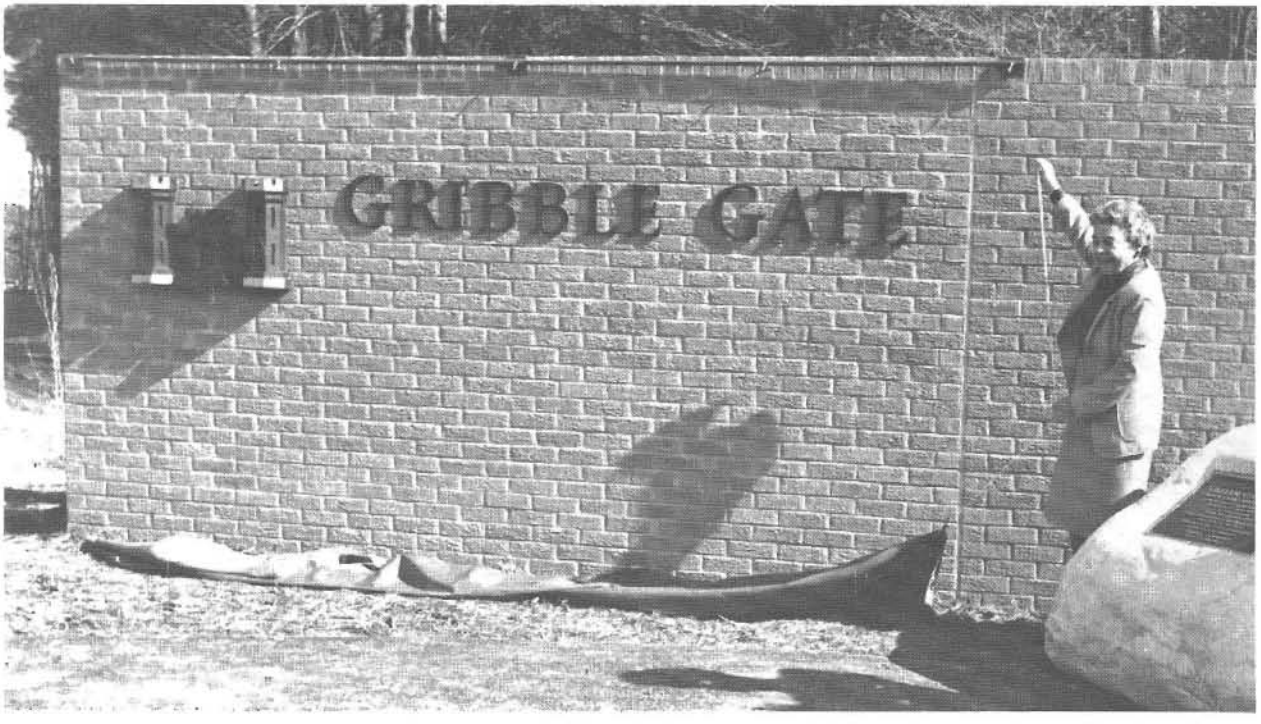
MOS 52E SHORTAGE

The Army is looking for soldiers interested in becoming prime power operators. A one-year training course at Fort Belvoir, VA, leads to MOS 52E, Prime Power Production Specialist, with an additional skill identifier in either mechanical electrical, instrumentation, or health physics. Prime Power Specialists operate and maintain Army non-tactical diesel and gas turbine generators. They may also be called on to work with heating, ventilation, air conditioning, boiler operation, and power distribution. The next class is scheduled to start in January 1981. If you're interested, write to the US Army Facilities Engineering Support Agency ATTN: Training Division, Fort Belvoir, VA 22060. Or call Commercial 703-664-5235 or AUTOVON 345-5241.



BATTLE REPORTS

Terrain reinforcement increases the advantages of the defender. It may consist of extensively engineered obstacles or simply an infantryman's fighting position. Terrain reinforcement counters an enemy's advantage of weaponry, superior numbers, or mobility. The latest in the TRADOC "Battle Report" series describes one type of terrain reinforcement—the tank ditch—and its use on the battle field. *Battle Reports* are used to disseminate lessons learned about how to fight on the modern battlefield. They provide interim guidance until their content can be integrated into appropriate how-to-fight, how-to-support, or other doctrinal publications. Army Training and Evaluation Programs (ARTEP), Field Manuals (FM), and Training Circulars (TC) continue to be the primary training references. TRADOC Bulletins, such as the *Battle Report* series, supplement them with an explanation of why we are training in a given manner. TRADOC Bulletins are cataloged in DA Pamphlet 310-3. The series is numbered consecutively, and each bulletin is distributed by the US Army AG Publications Center to all pinpoint account holders who indicate a desire to receive them. The *Battle Report* on Terrain Reinforcement/Tank Ditching is Number 13 in the series and is dated 28 March 1980.



MEMORIAL TO FORMER CHIEF

Mrs. Jane Watson Gribble unveils a memorial to her deceased husband, Lt. Gen. William C. Gribble, Jr., during recent ceremonies at Fort Belvoir, VA. The memorial is a new entrance gate to the Kingman Building complex, which houses several Corps of Engineers activities. Gribble, who died last June, retired in 1976 after serving as the Army's 43rd Chief of Engineers. His 35-year career was notable for assignments of expanded responsibility in the scientific and engineering fields. He was greatly respected as a leader and manager, and is credited with developing the technical specifications for the Army's first nuclear power plant.

FAMECE TERMINATED

The development program for the Family of Military Engineer Construction Equipment (FAMECE) was terminated last October by Department of the Army. FAMECE was an earthmoving equipment system designed to use a standard power section to doze, scrape, load, carry, place and compact earth in support of combat operations. The system included eight vehicles. Three reasons were cited in the decision to terminate FAMECE: (1) an official change in system distribution, limiting its use to airborne/airmobile organizations only; (2) lack of user acceptance as a result of troop operational testing, (3) problems with safety, human factors, reliability, and maintainability. These constraints limited the number of vehicles to be procured such that they could not be justified as cost-effective. An evaluation of possible alternatives to FAMECE resulted in the decision that Military Adaptation of Commercial Items (MACI) is the best approach to meet requirements for the near future (FY 81–86), given the constraints of program funding and time for acquisition.

STRONGER BRIDGING

The Army is studying the possibility of using composite materials instead of pure aluminum in future bridging equipment. The material, graphite fiber and epoxy resin, isn't new, but its application to military bridge structures is. The study is being conducted by the Mobility Equipment Research and Development Command. If results of the study are favorable, bridging components of future systems could be significantly lighter and stronger than prototype bridges of the "Bridging for the 1980s" system currently being evaluated.

60TH ANNIVERSARY

The US Army Engineer Topographic Laboratories will celebrate its 60th anniversary in conjunction with its annual Engineer Day Open House on June 24. The event will feature demonstrations of the latest mapping and surveying technology. Indoor and outdoor exhibits will trace historic achievements of ETL and its predecessors, the first of which was a small Engineer Detachment of the Army Air Service founded on April 5, 1920.

TO&E CHANGES

Department of the Army Consolidated Change Table 300-68, 1 April 1980, implements some long sought changes in Engineer Tables of Organization and Equipment. The most notable changes involve TO&E 5-52H, Headquarters and Headquarters Company, Engineer Group; TO&E 5-58H, Combat Support Equipment Company; and TO&E 5-115H, Engineer Combat Battalion (Heavy). Change 8 to TO&E 5-52H returns the Mess and Maintenance Sections to the Group Headquarters Company. There is also a slight increase in vehicles and radios. Change 9 to TO&E 5-58H moves certain equipment from the Equipment Platoon to the Quarry Section to make it independent. It also adds a 5-ton wrecker to the DS Maintenance Platoon and adds radios for the platoon leaders. Changes to TO&E 5-115H will be published as Change 14 to TO&E 5-116, Change 12 to TO&E 5-117, and Change 12 to TO&E 5-118. The most important changes to these TO&Es include the following:

- the addition of squad and platoon radios
- the replacement of 20-ton dump trucks with 5-ton trucks in the line companies
- the addition of a 20-ton Dump Truck Section to TO&E 5-117
- the substitution of D-7 dozers for D-8 dozers in the line companies.

THE XM1 TANK

Staff Sergeant Steve Armstrong directs backing of XM1 "Abrams" Tank after demonstrating its vertical climbing ability at the Army's Lima, OH tank plant in late February, shortly after the first two production models had rolled off the assembly line. The XM1 is the first totally new US tank in more than 30 years. The hull and turret are welded from cut and shaped pieces of armor plate. The M60 series tanks, on the other hand, have cast hulls and turrets. The XM1 has a lower silhouette, better crew protection, greater speed, faster acceleration, and improved first round hit probability with its gyro-stabilized gun and fire control system. In addition to providing greater power, the 1500-horsepower turbine engine is much quieter, smokeless, and lighter in weight. The turbine engine starts easily in most weather conditions and is easier to maintain and repair than comparable diesel engines. The Army contracted for 110 of the new tanks in FY 79 and current plans call for more than 7,000 to be built over the next eight years.

FORUM

Strengthening the Backbone

MASTER SERGEANT ARCHER W. MILLER JR.

EDITOR'S NOTE: Forum is a new section or "department" designed to provide additional space for the expression of professional views by Army engineers worldwide. It is hoped that engineer officers, enlisted personnel, and DA civilians employed in Army engineer related jobs will take advantage of the opportunity to express their views on doctrine, organization, tactics, equipment, management, training, leadership, or any other subject with potential interest for soldiers in general, or engineers in particular. What you have to say is the most important consideration, not how you say it or how much you say. ENGINEER Magazine was originally intended to provide a forum for two-way communication, but feedback/input from the field has all but ceased during the last few years. Thus, we encourage your renewed participation in the communication process. If you have something worthwhile to share with others, we want to hear from you. The following article, reprinted from INFANTRY Magazine, is an excellent example of input from the field that we encourage.

The Noncommissioned Officer Corps, the backbone of our Army, is the life line between those who command and those who are commanded. Without the NCO, neither the commander nor the commanded can be effective.

Our NCO corps is strong, but can be strengthened. And while much has been written about how we should lead, fight, command, and train, not enough has been written about what our NCOs are supposed to do or how they can be improved.

The NCO's job, whether he is a corporal or a command sergeant major is:

To conduct the daily business of the Army.

To focus on the individual training of enlisted soldiers.

To insure that his soldiers have the individual equipment they are supposed to have and that it is in serviceable condition.

To insure that the enlisted soldiers function as effective team members.

To focus on the standards, care, professionalism, and military courtesy of the enlisted soldiers.

To advise, assist, and support those appointed over him.

I believe that there are four ways in which we can police and strengthen our time-honored ranks.

First, we must quit bellyaching about the Volunteer Army (VOLAR), about losing our authority (if, in fact, we are losing or have lost it), and about the Army's ills. We need to rechannel the energy we spend in those endeavors to make VOLAR work, to regain whatever authority we may have lost, and to work to correct the ills of our Army. After all, we are professionals and volunteers. If we do not like what we see but do not attempt to do anything to correct the problems, then we should enter a new profession. When we hear others bellyaching, we must ask them what they are doing to correct the situation they speak

of, and we should offer advice on how to make the needed corrections. This will take moral courage on our part. After all, it is easier to gripe and to pass the buck than it is to take an unpopular position.

Next, we must rid our ranks of those nonproductive "stripe bearers" who make up a small but cancerous portion of our corps.

Our noncommissioned officers can be divided into three groups. Those in the first group immediately impress their superiors with their ability and desire to do the best job they can. When they say that a job is completed, we can rest assured that it is, and that it is usually done well. Unfortunately, as a regard for their effort, initiative, and ability, these NCOs are all too often given work because they earn the trust and confidence of their superiors.

The stripe bearers, on the other hand, impress their superiors, their peers, and their subordinates in just the opposite manner and, thus, are not called on to perform difficult, time-consuming tasks. Who wants to be embarrassed by a subordinate's poor performance? Who can trust him?

Unfortunately, however, they also receive good efficiency reports, letters, awards, promotions. In addition, they get soft jobs, work fewer hours, and are picked for choice TDY assignments and schooling because this is an easy way to get rid of them.

Those in the middle group, whom I call the average majority, observe these happenings, and they wonder—why should I excel if all it will get me is more work? The stripe bearers seem to get the same rewards. Is peace of mind and selfsatisfaction worth the effort?

SOLUTION

What is the solution? We must develop the moral courage to look the nonperformers in the eye and tell them they are not measuring up to the Army's standards. Some of them have never been told this before and honestly think their behavior is acceptable. We must tell them what the acceptable standards are, how they can reach those standards, and the action we will take if they do not, and give them a reasonable amount of time to demonstrate measurable improvement.

I admit that this is not an easy thing to do. It is much easier to look the other way, to let someone else take care of it, or to wait until a set of PCS orders makes it some other NCO's problem. When we do counsel, we must document our actions, or advice, and any and all changes in the soldier's performance so that we can present an honest appraisal and recommendation to our superiors, who have the authority to rid our Army of these destructive members of our corps should our efforts prove fruitless. No matter what decision our superiors make, we must support that decision.

The third thing we can do to strengthen our NCO corps is to groom not only our young corporals and sergeants, but the soldiers who aspire to those ranks as well. They are not really different from the way we were 10, 15, or 20 years ago when we were first-termers. We are still dealing with human beings, and the physical, safety, security, social, and self-fulfillment needs we had are the same ones our subordinates have today. We may live in a more permissive and educated society, and this may cause our soldiers to look at authority today in a different way. They understand that their superiors have a legitimate authority and with it, the power of coercion. Soldiers want their NCOs to communicate effectively with them, to have a certain expertise, and to gain their respect through the proper use of their power. Did we want anything different?

The fourth thing that we, the senior NCOs of today, must do is to instill in the senior NCOs of tomorrow an appreciation for and a sense of value in the time-tested traits and principles of leadership. We must do this by demonstrating those traits and principles to our subordinates. We must set challenging but attainable goals, insist on hard but fair and just discipline, demonstrate high standards of appearance, provide good training, and insure that we make productive use of their time.

Our subordinates see the Army through us—their immediate leaders. They do not realize or appreciate the size and complexity of our Army, or how it functions. The chain of command for our young soldiers for all practical purposes stops at the battalion level.

I feel it is time to clean out our ranks. This will, in turn strengthen our corps. We must quit passing the buck. We must accept our resonsibilities, analyze them, and demonstrate through our daily actions the proper traits and principles of leadership. We must treat our subordinates as we want to be treated—with respect, sincere concern, and honest interest. Above all else, we must exercise moral courage.

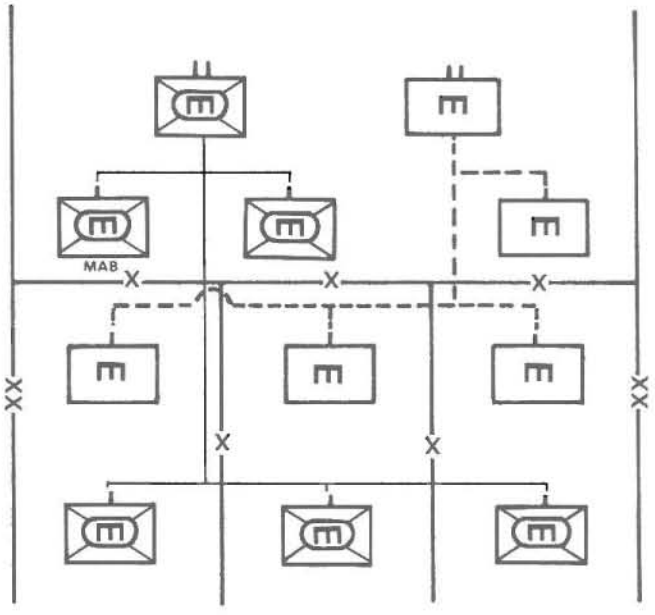
Master Sergeant Archer W. Miller, Jr., is a recent graduate of the Sergeants Major Academy. He is presently assigned as the First Sergeant, Headquarters and Headquarters Company, 2d Brigade, 101st Airborne Division (Air Assault).

Early planning is required for the preparation of antitank ditches

Corps Engineers Far Forward

The 78th Engineer Battalion and other Orange Forces engineers accomplished their mission during REFORGER 79, but it could have been done easier and much more efficiently

by LTC Fred C. Edwards & MAJ Stephen E. Draper



Typical deployment in USAREUR Divisional AO

	Combat Platoons	Combat Platoons	Equipment Platoons	Bridging (MAB)
Divisional	9	3	1	24
Corps	9	3	1	0
Total	18	6	2	24
	Bde AO	Division Rear		

FIGURE 1

Exercise CERTAIN SENTINEL/REFORGER '79 provided the 78th Engineer Battalion (Combat) the opportunity to function in direct support of an armored maneuver brigade. Different? Weird? Many adjectives have been used to describe this organization for combat, but "unorthodox" is probably the most applicable.

Several tactically sound reasons for placing a wheeled engineer battalion in this role are presented herein but the real reason is that all available engineers are needed as far forward as possible on the European battlefield. The engineer mission is so critical that "'story book" concepts of organization and employment must yield to the lessons learned over and over again on operations such as REFORGER, even if doing the job right requires unorthodox, adhoc organizations.

Due to the critical requirement for putting all available engineers as far forward as possible, corps engineer battalions in Germany are routinely placed in direct support of divisions. The organization is not new. What is new is that corps engineers are now being employed where the requirement is—up front in the maneuver brigade area of operations (AO). Typically, one line company will be placed in direct support (DS) of each maneuver brigade and employed by the brigade engineers alongside the divisional engineer company. Exercise after exercise has shown that a two-company task force is the minimum essential to handle the heavy engineer load. And, since the Brigade Commander fights the battle, the engineers must be responsive to him through the brigade engineer.

Exercise after exercise has demonstrated that a divisional engineer company cannot provide the Brigade Commander the needed responsiveness and also execute missions. This fact of life is recognized by engineers in Europe. Hence, majors are dispatched from both the divisional and corps battalions to form adhoc Brigade Engineer sections. The end result is the organization shown in Figure 1. The odd man out in the adhoc organization is the corps engineer battalion headquarters

and the one remaining combat company. During REFORGER '79, the Orange Force commander's concept of operations made good use of these assets.

The Orange attack plan is shown in Figure 2. The Main River was an obstacle in two respects. It slowed the initial momentum of the main attack, and it complicated lateral communications. The uncommitted line company from the 78th helped solve the first problem by being placed under operational control of the Crossing Area Control Group. The second problem was solved when the 78th Battalion Headquarters was placed in direct support of the western-most brigade. The maneuver brigade commander then had a battalion headquarters to control his engineer effort.

Placement of the battalion headquarters in the western sector also dovetailed with the Orange deception plan by helping to depict the main attack in the west. With the addition of a Ribbon Bridge company, Task Force 78 started the "war" with one divisional combat company, one organic corps combat company, and one Ribbon Bridge company, a force of over 500 engineers (see Figure 3). This is a lot of engineer horsepower for a maneuver brigade, but as the battle unfolded, even more could have been used. Up Front, engineer requirements are enormous.

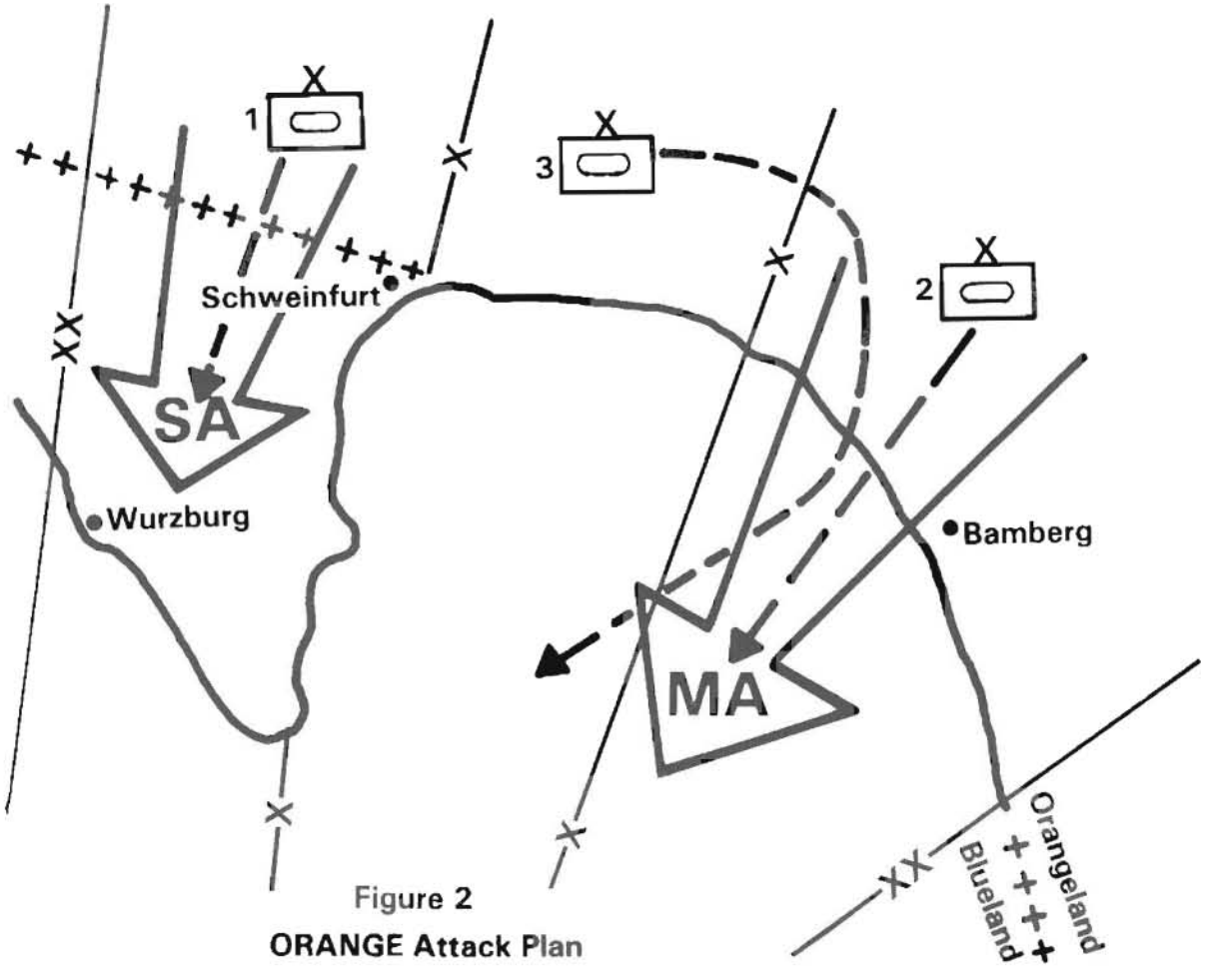


Figure 2
ORANGE Attack Plan

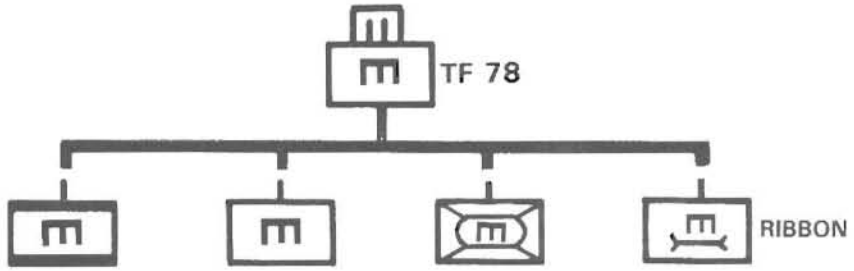
The purpose here is not to present a "war story" about one operation, but instead to provide insight into difficulties facing corps and divisional engineers when operating far forward due to present-day organization and equipment. Granted, many of the problems would not have arisen if current doctrinal tenants of engineer employment had been followed. The counterpoint to this argument and, indeed, the reasons for this article, are that: in Europe, the engineer requirement is tremendous and is greatest in the forward area of operations; to fulfill the requirement, all divisional and corps engineers must work side by side; without changes in present organization and equipment, the capability of these engineers will be less than optimal.

During REFORGER '79, Orange Forces participated in deliberate and hasty river crossings, and in offensive and defensive operations. Throughout the exercise the HQ of Task Force 78, commanded by a lieutenant colonel, provided the brigade commander superb engineer planning support, and engineer command and control. All battle plans had engineer input before execution. The effort and resources expended by the Task Force Headquarters to

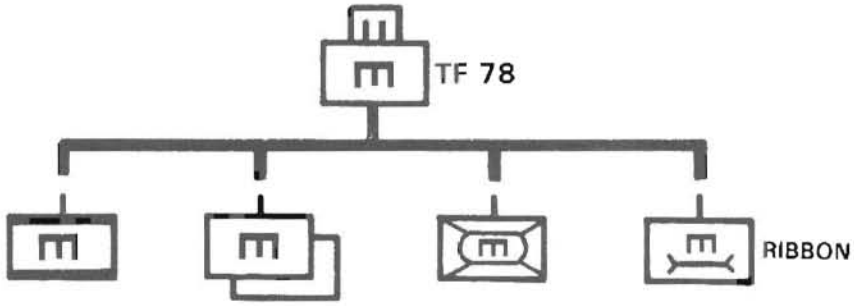
keep pace with the maneuver force during the attack, however, were almost overwhelming. It required four engineer tactical operations centers to keep pace with the maneuver brigade. The Task Force tactical operations center was often 20-30 kilometers from the Headquarters support elements.

During the attack, the corps combat company could not keep pace with maneuver units. Hence, the divisional, tracked engineers provided direct support (DS) to the maneuver battalions, while the corps company handled the flanks and cleared bypassed obstacles. The defense are demolitions and mines, bulky and heavy stuff. Faced with a similar problem, the artillery rid itself of 5-ton dump trucks years ago.

Communications were a constant hassle, especially with 78th Battalion companies DS to other brigades. These companies needed FM capability for three nets: the brigade engineer net, their parent battalion's net, and their internal net. Presently, they can support only two nets. Similarly, the TF 78 commander required three nets: the divisional engineer net, the maneuver brigade net, and the internal net. Current capability pro-



Task Force: Attack Phase



Task Force: Defense Phase

Figure 3

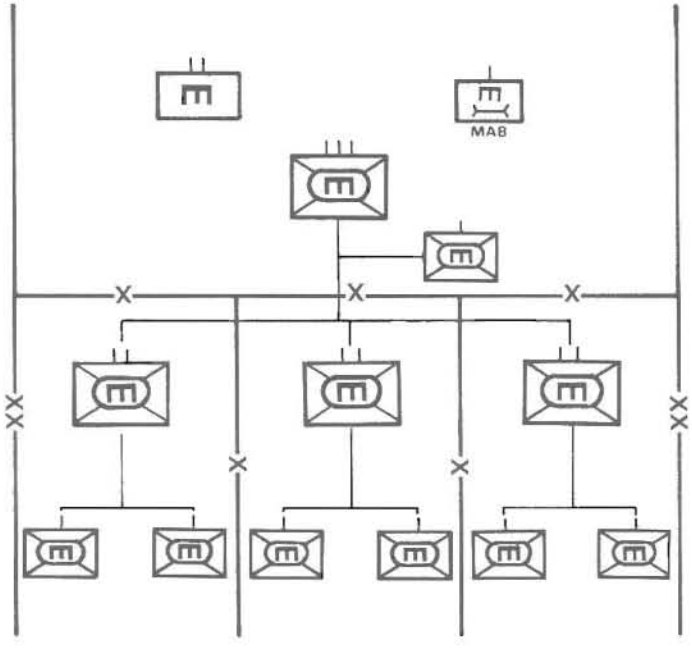
attack moved fast due to target turn-over problems of the Blue Force. Blue Engineers had emplaced superb obstacles, but many were never executed. Had they been executed, the Orange brigade attack may have quickly bogged down because neither corps nor divisional engineers have adequate obstacle breaching capability. The ribbon bridge was superb and made hasty river crossings a "piece of cake" except for one lingering problem, bank preparations. It is completely assinine to delay a river crossing while a D-7 dozer is wheeled into position and off-loaded to begin bank preparations.

In preparing for the defense, the corps engineer company is the best asset due to haul capability, but it is foolish to believe that engineers can prepare a good hasty defense with the meager haul capability of the 5-ton dump truck. Up front, the keys to an effective vides only two. Due to the dispersal of forces, FM radio range was also a problem. The one retransmission unit authorized the battalion was not enough.

Survivability obviously decreases as units move forward. However, units without antitank capability, or even the passive protection of armored vehicles and winter camouflage are in for big trouble. TF 78 was constantly in enemy artillery range and was hit on several occasions by enemy air strikes.

Logistics worked with the ease of giving birth to a square elephant and would have been worse except for cooperation by the Division Support Command (DISCOM). The 78th Battalion Headquarters was in the westernmost part of the Orange sector. Three line companies were spread eastward across the division area of operations. Since the 78th is a corps battalion, use of

corps supply points was mandatory, as expressed in the operations (OP) order. Typically, corps supply and service installations are located behind the division. As the attack progressed, the supply lines for 78th Battalion units grew longer and longer. Consequently, additional communication problems were created by distance between the Battalion Headquarters and organic companies.



Proposed Engineer Deployment in Divisional AO

	Combat Platoons	Combat Platoons	Equipment Platoons	Bridging (MAB)
Divisional	18	3	1	0
Corps	0	9	1	24
Total	18	12	2	24
	Bde AO	Division Rear		

FIGURE 4

The situation became marginally manageable in the short run and totally unmanageable in the long term. At best, it drives the battalion staff batty. Simple procedures such as distribution of mail, issuing replacement equipment and movement of replaced personnel became astronomical problems.

The 78th Engineer Battalion and other Orange engineers accomplished their mission during REFORGER '79, but it could have been done easier and much more efficiently. The authors recommend that the following actions be taken:

- Recognize the requirement for a two-company force in the brigade Area of Operations and the brigade engineers; reorganize the division engineers accordingly. The organization shown in Figure 4 is recommended.
- Mechanize corps engineers who support mechanized units.
- Provide mechanized engineers with a mobile earth-moving capability (the UET will work).
- Provide a capability to rapidly clear mine fields.
- Provide more capability to haul munitions.
- Beef up FM communications. Provide a capability to operate on three nets at company level and provide one additional retransmission unit to corps battalions.
- Develop a logistics system which allows corps units to quickly transition from corps support facilities to DISCOM.
- Develop a firm doctrine concerning engineer target turn-over and teach the doctrine at all branch schools.

Lieutenant Colonel Fred C. Edwards is Commander of the 78th Engineer Battalion, 7th Engineer Brigade. Major Stephen E. Draper is the Executive Officer of the 78th Engineer Battalion.

SFC LOCKWOOD

The Sturgis Award

SFC Harold A. Lockwood is cited for exceptional achievement during 1979

The winner of the Sturgis Award for 1979 is Sergeant First Class Harold A. Lockwood, Company C, 78th Engineer Combat Battalion, 7th Engineer Brigade, VII Corps, USAREUR. SFC Lockwood's citation reads, in part, as follows:

"Sergeant First Class Harold A. Lockwood . . . is cited for exceptionally meritorious achievement and service from January 1979 through December 1979. During this period, SFC Lockwood served as Senior Drill Sergeant with the 3d BCT Brigade, Fort Leonard Wood, MO, and as acting Platoon Leader and Platoon Sergeant with C Company, 78th Engineer Battalion. As a drill sergeant, SFC Lockwood's skills were readily evidenced by his selection as Honor Graduate of the Fort Leonard Wood Drill Sergeant Academy. Maintaining this record of excellence, he was four times selected Drill Sergeant of the Cycle . . . at that training base. SFC Lockwood's attributes as a Platoon Sergeant with Company C are reflected in the accomplishments of his platoon during the latter half of 1979. During a five-month period of intensive activity, his platoon successsfully completed the following projects:

- Construction of two underground, reinforced concrete oil collection vaults;
- Renovation of a 70-foot permanently installed Bailey Bridge in the German community of Ettlingen;
- Construction projects for the Stuttgart Military Community, including a pressbox for the American high school football field, a communications security vault, a physical training facility . . . and two handball/racquetball courts.

That these projects were completed ahead of schedule while exceeding design specifications is . . . testimony to SFC Lockwood's managerial ability. That these projects were accomplished by a unit which had not been given a construction mission in two years is remarkable. Obviously, SFC Lockwood provided the essential leadership to mold his platoon into a highly efficient and effective organization.

SFC Lockwood exemplifies the ideal engineer NCO. He is a true professional whose accomplishments have . . . been outstanding."

PREVIOUS STURGIS AWARD WINNERS

1974	**SFC Charles E. Oliver**	**79th Engineer Battalion**
1975	**SGT Douglas R. Carron**	**802d Engineer Battalion**
1976	**SSG James E. Skellion**	**27th Engineer Battalion**
1977	**SSG Humberto A. McLaren**	**802d Engineer Battalion**
1978	**SFC Lanny R. Hodges**	**94th Engineer Battalion**

The Sturgis Medal is named for Lieutenant General Samuel D. Sturgis, Jr., former Chief of Engineers. The medal is offered *by the Society of American Military Engineers (SAME)* as an annual award to an active duty enlisted member of the U.S. Army to recognize outstanding contributions to military troop construction and/or base maintenance, by demonstrated technical and leadership ability. The award is presented to an individual within one of the following Army career fields: combat engineering, construction and utilities, power production, heavy equipment and maintenance, drafting, surveying, printing, special electrical devices, instrument repairman, and reproduction repairmen. The award was made for the first time in 1975 to Sergeant First Class Charles E. Oliver of the 79th Engineer Battalion for his outstanding performance of duties during calendar year 1974.

Other nominees for the Sturgis Award for 1979 included:

USAREUR: SSG Richard F. Flory, Company B, 79th Engineer Combat Battalion (Heavy), 18th Engineer Brigade.

FORSCOM: SSG Charles R. Parks, Company C, 39th Engineer Combat Battalion, Fort Devens, MA.

FORSCOM: SSG Alfonso Carrasco, Company C, 14th Engineer Combat Battalion (Corps), Fort Ord, CA.

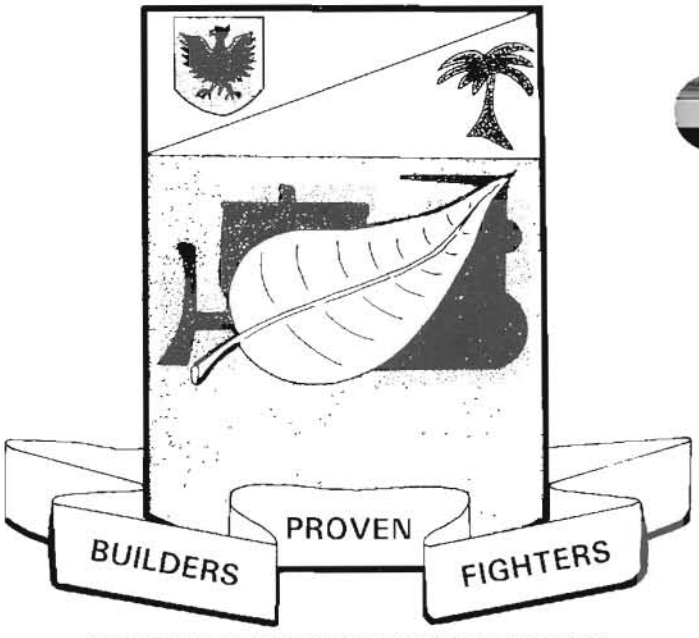
TRADOC: SFC(P) Willie B. Jones, Company A, 2d Battalion, US Army Engineer Center Brigade, Fort Belvoir, VA.

WESTCOM: SGT Guy L. Hall, Headquarters Company, 65th Engineer Combat Battalion, Schofield Barracks, HI.

EUSA: SFC Richard J. Eckhardt, Company C, 44th Engineer Combat Battalion (Heavy), 2nd Engineer Group.

The Itschner Award

568th ENGINEER COMPANY



(COMBAT SUPPORT EQUIPMENT)

The 568th Engineer Company (Combat Support Equipment), 559th Engineer Battalion, 130th Engineer Brigade, V Corps, is the winner of the Itschner Award for Active Army units for calendar year 1979. The award citation, in part, reads as follows:

"The 568th Engineer Company . . . is cited for exceptionally meritorious achievements and service . . . During 1979, the company consistently demonstrated its outstanding construction and combat support capabilities and excelled in every area of operations, to include training, maintenance, and administration. Despite a serious shortage of equipment operators and NCOs, the 568th Engineer Company successfully completed such diverse tasks as the construction of scaled tank gunnery ranges, ... 15 kilometers of tank trail, . . . tank ditching exercises in support of the 3d Armored Division and other Central Army Group elements, and the construction of hull defilade firing positions for a variety of vehicles. While carrying out construction and combat support missions, the unit did not lose sight of its responsibilities to the men and women of the company. The esprit de corps and morale within the unit were unequalled. This is readily reflected in the 127 percent reenlistment rate during 1979 and the fact that a majority of those reenlisting did so for their present duty assignment. Education and self-improvement were emphasized and encouraged as an effective method to improve leadership, professionalism, and skill . . . The successful integration of women into the unit, along with their significant contributions to mission performance, was singularly noteworthy. By its actions, the 568th Engineer Company has made great strides in enhancing the role and image of Engineers in the modern battlefield . . . ."

The 568th was commanded by Captain Champney A. McNair, Jr., through February 27, 1979, and by Captain Sheldon L. Jahn from February 28 throughout the remainder of the year.

The 568th is physically located in Pioneer Kaserne, Hanau, Federal Republic of Germany.

The Itschner Awards are silver plaques named for the former Chief of Engineers, US Army, Lieutenant General Emerson C. Itschner. From 1960, when it was first awarded, until 1973, it was offered annually by the Society of American Military Engineers to one unit of the Army Corps of Engineers selected as the most outstanding unit during the previous calendar year. Since 1974, three awards have been offered annually to the most outstanding Active Army unit, Reserve unit, and National Guard unit of the Corps of Engineers.

Other nominees for the Itschner Award for Active Army units included:

USAREUR: Company B, 79th Engineer Combat Battalion (Heavy), 18th Engineer Brigade.

USAREUR: Company D, 16th Engineer Combat Battalion, 1st Armored Division.

FORSCOM: Company C, 548th Engineer Combat Battalion (Heavy), Fort Bragg, NC.

FORSCOM: 66th Engineer Company (ADM), 62d Engineer Combat Battalion (Heavy), Fort Hood, TX.

TRADOC: Company A, 2nd Battalion, 2nd Training Brigade (OSUT), Fort Leonard Wood, MO.

WESTCOM: Company A, 65th Engineer Combat Battalion, 25th Infantry Division, Schofield Barracks, HI.

EUSA: Company D, 44th Engineer Combat Battalion (Heavy).

PREVIOUS ITSCHNER AWARD WINNERS (Active Army)

YEAR	UNIT	COMMANDER(S)
1960	100th Engineer Company (Float Bridge), Fort Belvoir, Virginia	CPT Albert L. Schneider
1961	562d Engineer Company (CBT) Alaska	CPT Kermit Hoeft
1962	Company B, 307th Engineer Battalion (ABN), Fort Bragg, NC	CPT Harry A. Hodges
1963	Company A. 8th Engineer Battalion (CBT), Korea	CPT J.H. Carnes, Jr.
1964	618th Engineer Company (Light Equip) 307th Engineer Battalion (ABN) Fort Bragg, NC	1LT Daniel R. Schroeder
1965	Company A. 326th Engineer Battalion 101st Airborne Division, Vietnam	CPT George T. Kimbro
1966	Company A, 39th Engineer Battalion (CBT) 45th Engineer Group (Constr), Vietnam	CPT George P. Johnson
1967	173d Airborne Engineer Company, Vietnam	CPT Glenn H. Lehrer & CPT Thomas E. Weber
1968	Company C, 39th Engineer Battalion (CBT), 45th Engineer Group (Constr), Vietnam	CPT Philip H. Izard
1969	87th Engineer Company, 199th Infantry Brigade, Vietnam	CPT Robert J. Walters & CPT Mark F. Moran
1970	Company C. 8th Engineer Battalion (Airmobile), Vietnam	CPT Donald J. Hejna
1971	Company A, 326th Engineer Battalion 101st Airborne Division (Airmobile), Vietnam	CPT Charles B. Yonn III & CPT John T. Sevier
1972	518th Company (CBT), 193d Infantry Brigade, Fort Kobbe, Canal Zone	CPT Philip C. Gee & CPT Garry V. Cooper
1973	370th Engineer Company (Constr Sup), 24th Engineer Group, USAREUR	CPT Robert Potter & CPT John W. Braden, Jr.
1974	Company D, 802d Engineer Battalion, 2d Engineer Group, Eighth U.S. Army	CPT David E. Spaulding
1975	Company B, 10th Engineer Battalion (CBT) 3d Infantry Division	CPT Albert Kraus
1976	Company A, 293d Engineer Battalion (CBT) (HVY) 24th Engineer Group, USAREUR	CPT Leon J. Lang
1977	Company C, 547th Combat Engineer Battalion, 130th Engineer Brigade, V Corps, USAREUR	CPT Richard A. Nance
1978	Company A, 12th Engineer Battalion, 8th Infantry Division, USAREUR	CPT Wayne F. Leadbetter, Jr.

ARNG AWARD

The 1979 Itschner Award for the Army National Guard goes to the 269th Engineer Company (Construction Support), Florida Army National Guard, Live Oak, FL. The award citation, in part, reads as follows:

"The 269th Engineer Company maintained an average actual strength of 103 percent during 1979. With a nonexistent draft, this remarkable. . .accomplishment was due in part to a total collective effort by unit members to sell the National Guard, and to a dedicated, concerted effort in support of the unit recruiting program. The spirit of the unit training program is exemplified by its selection as a superior unit for Training Year 79. The conduct of realistic meaningful training is . . . an important factor in the unit's outstanding success in recruiting, retention, morale, and esprit-de-corps. Unit performance is a direct result of strong leadership, an effective chain of command, and an active recruiting program."

USAR AWARD

The US Army Reserve unit selected to receive the Itschner Award for calendar year 1979 is Company D, 467th Engineer Battalion, Greenville, MS. The award citation, in part, reads as follows:

"During 1979, Company D, 467th Engineer Battalion, received the First US Army Excellence in Training Award, achieved a satisfactory Annual General Inspection rating, and was selected as the most outstanding company-size unit in Army Readiness Region IV. Company D . . . has been highly successful in the areas of maintenance, unit strength, attendance, training, and readiness. Dynamic training has been a leading factor in sustaining outstanding unit esprit-de-corps and morale. An active community support program has made Company D well known and accepted by the local civilian community."

The Realities of River Crossings

The lessons which come through from all successful assault river crossings is the attention to detail and the critical importance of engineers

by MAJ Douglas J. George, RAE

Rivers have never been a handicap to the side with the upper hand in war. Really, it is rather amazing that after all these centuries of disproof, we still talk and think of them as obstacles. Basically, when prehistoric man invented the boat, rivers ceased to be obstacles. One can argue that, intrinsically, they became just the opposite. From the time that Alexander made his classic crossing of the Hydaspes River in India in 326 BC until the mighty Rhine was conquered in 1945, the great majority of assault river crossings have been successful.

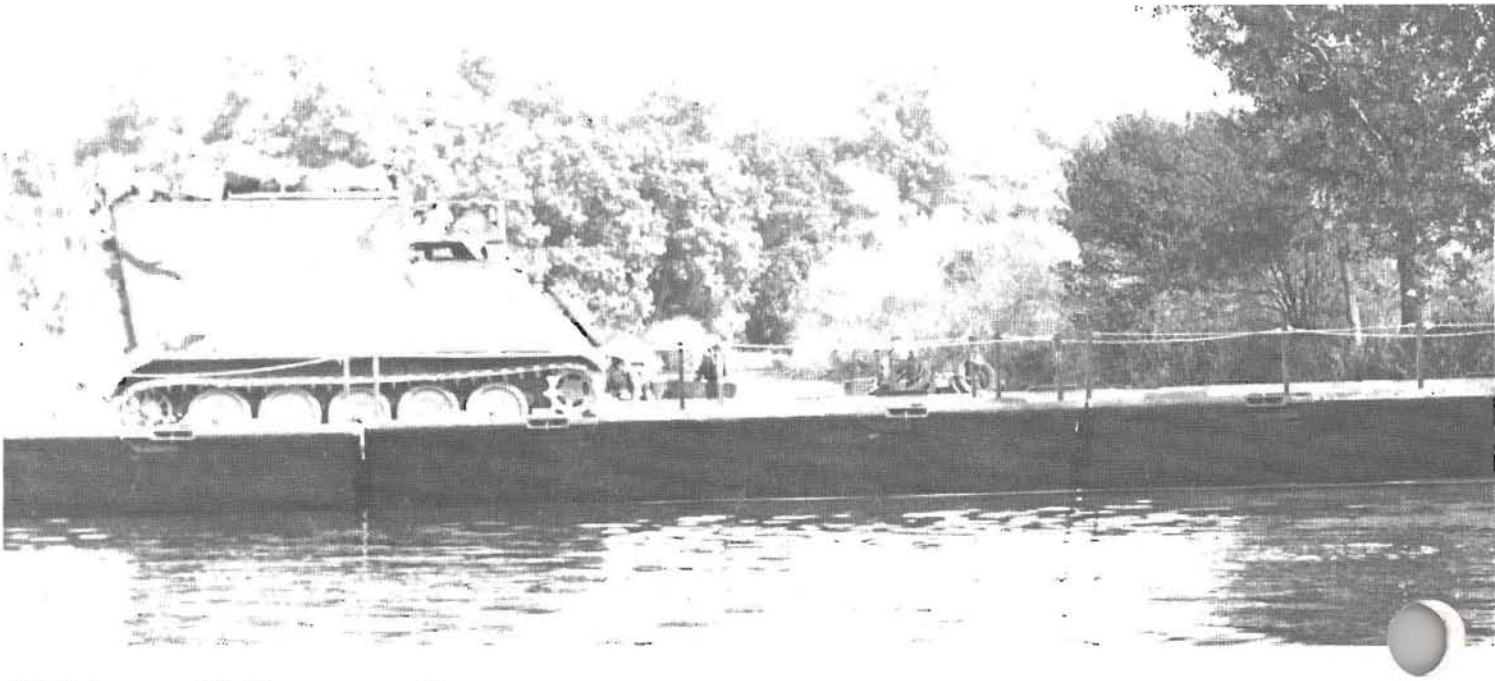
Sure, there have been failures, and these have been adequately documented. The failure at the Rapido in 1944 provides an excellent example of how not to do it! Why, therefore, have river crossing attacks been almost infallibly successful?

First, as a commander, you never attack unless you fancy your chances. That is, unless the odds are in your favor. When you have to put your troops into the attack across a river, you are even less inclined to gamble.

Second, often a river crossing attack can be foretold and foreseen weeks in advance so that planning, preparation, and even rehearsal can be done almost at leisure.

Third, when an advancing force reaches a river, it can pause to mount its attack (if a hasty crossing is not feasible) because the enemy is unlikely to thrust across a river from a defensive posture. The attacker also has the advantage of knowing how long the pause will be.

Lastly, the presence of a river seems to induce a commander to plan and organize his attack more carefully and in more detail. He is also likely to pay more heed to his engineer advisor than he does ordinarily. It is this subject that I wish to address.



M577 Command Vehicle crosses ribbon bridge

The recent publication of FM 90-13, River Crossing Operations, and the excellent article "Crossing the Main River" by Lieutenant Colonel Dennis K. Culp (Military Review, February 1980) suggest that it is time to review our doctrine. The quality of engineer advice is so critical in a river crossing operation that we must fully comprehend doctrine and its limitations. We might even try to improve it!

PLANNING—THE CRITICAL PART

If a deliberate crossing is envisaged, the division selected to do it should be pulled from the line to prepare for it. One could argue that this will not be possible in the next war, which is likely to be a fluid, mobile, and lethal affair. I would suggest that for any guarantee of success, the assaulting division will require time to prepare, especially if the selected division has been fighting defensively. As a bare minimum, it will require some reconstitution.

Most of the assets required for the division to deliberately cross a river will be provided by Corps. The only divisional engineer asset which will be involved in the rafting and bridging phases will be the bridge company of the divisional engineer battalion.

Corps Military Police (MP) assets will undertake traffic control tasks. If possible, Corps elements will provide Air Defense Artillery (ADA) protection and ground security. The logical deduction from this is that planning for support in the Crossing Areas (CAs) should be done by the headquarters which will control it. In essence, Corps elements do the planning for all aspects of a river crossing except the assault phase.

What sort of engineer elements will be provided for the division? Optimists would like to see a group headquarters to command all engineer assets. If a group headquarters is not available, a battalion headquarters is required. The selected battalion headquarters should be well-practiced in the planning and conduct of river crossing operations. Headquarters and Headquarters Detachments (HHDs) such as those which command the 559th and 565th Engineer Battalions, are the most logical choices because of their continuous intimate involvement in river crossings. The only shortcoming with this organization is that an HHD has a restricted and limited capacity for command and control. If these detachments were transformed into complete Headquarters and Headquarters Companies (HHCs), the capacity to plan, command and control river crossings from an engineer standpoint will be readily available.

The incoming engineer headquarters, called the Crossing Force Engineer (CFE) and staff, would undertake all engineer planning for the division crossing. The CFE's point of contact initially will be the Assault Division Engineer (ADE). The CFE will concentrate on the crossing area and the divisional engineer battalion will concentrate on supporting the assault battalions in the attack.

The primary reference for the engineer planning process is Appendix E of FM 90-13. It does have some shortcomings, the primary ones being:

—It takes no account of the maneuver commander's desire to cross his units organized for the battle.

—It provides an optimistic "operations research" type approach to determining how long it will take to cross.

—It suggests that amphibians in Division Troops, Division Artillery, and Division Support Command (DISCOM) will swim, even when rafts and bridges have been established.

Apendix E to FM 90-13 should be revised to reflect live constraints. The planning methodology is fine but it's a bit like a computer—you must feed in the correct input.

THE ASSAULT

Greater emphasis should be placed on the intial necessity to assault in pneumatic boats. Although swimming of amphibious vehicles is a more desirable method of assaulting, I suggest that it will rarely be possible. The Armored Personnel Carrier's (APC's) ability to exit from a river is, at best, very limited. Exit bank preparation will be required and will normally be achieved by troops crossing in pneumatic boats and working with hand tools. The first heavy vehicle crossed should be a bulldozer or CEV to further prepare the exit banks.

Another aspect of the assault which should receive

greater emphasis is the seizure of the far bank using vertical envelopment. River crossings require at least an air parity situation. Air superiority can be guaranteed for specific periods and this will be necessary for successful air assault. The time saved in securing the far bank will allow rafts and bridges to be constructed much earlier than normal.

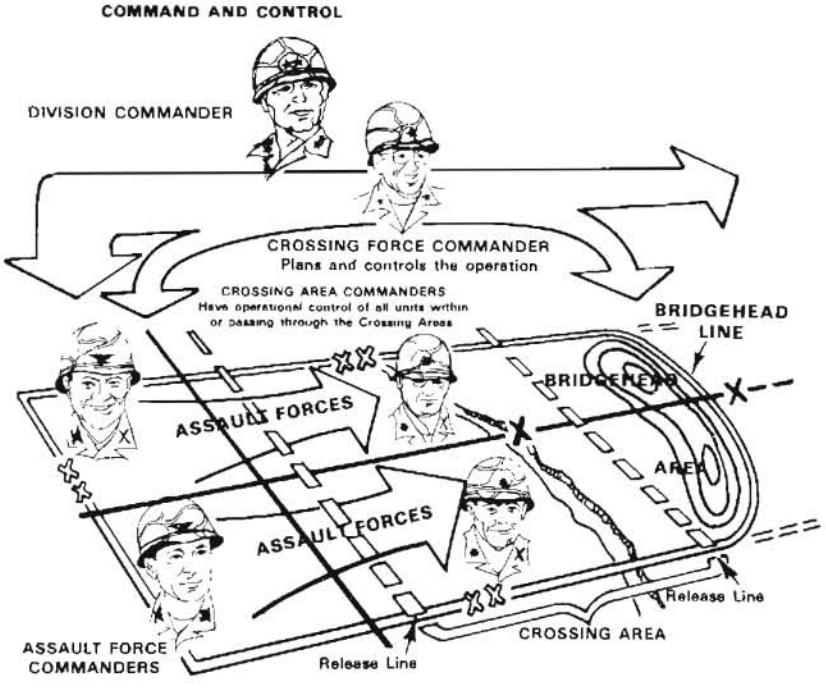
To raft or bridge is the question? Doctrine stresses the classic approach to crossing rivers; namely assaulting, then rafting, and then bridging. However, the ribbon bridge can be erected very quickly. A 100-meter gap can be bridged in 30 minutes. In the following 30 minutes, 100 vehicles, all tanks if you wish, can be crossed. Compare this with rafting with a similar amount of equipment. Assuming that sufficient ramp sections are available, four rafts can be constructed in 15 minutes. The next 45 minutes will allow five round-trips per raft, enabling a total of 20 tanks to be moved across. It becomes, therefore, a question of whether the maneuver commander is prepared to wait an extra 15 minutes before crossing any tanks.

The buildup rate with a bridge is so much greater that it is difficult to argue in favor of rafting. However, there are some additional considerations. Rafting at multiple sites offers an attacking force dispersion over a wider front. This makes it difficult for a defender to concentrate and defeat each small bridgehead. If you bridge, you have to concentrate, but so can the defender. The wider the river, the longer it will take to bridge, and the longer it will take to get heavy support weapons across to defeat enemy counterattacks.

It can also be argued that a bridge is far more vulnerable to air attack than a number of rafts. However, a bridge can be broken, moved 500 meters and reestablished in 30 minutes. *The real issue at stake here is that doctrine must be written in concert with the equipment available.* I'd go for a bridge and forget about rafting.

COMMAND AND CONTROL

During the planning phase, the Crossing Force Commander (CFC) will establish his HQ, called the Crossing Force HQ (CFHQ), near the Division Main Command Post (CP). Prior to the start of the operation, it will relocate close to the Division Tactical CP. The Tactical CP—not the Main CP, as suggested by doctrine—is more appropriate because the Tactical CP controls the battle and brigades which will be crossing.



The CFHQ should include the CFC, the CFE and his headquarters, ADA representatives, MPs, the transportation section from the Division G4 cell, and security element representatives. Current doctrine suggests that the Traffic Headquarters (TfcHQ) is a separate entity and not a part of the CFHQ. The saving in time and reduced amount of confusion which would be gained by making the TfcHQ part of the CFHQ would be substantial. Doctrine should reflect this.

Subordinate to the CFHQ will be the Crossing Area HQ, commanded by the Executive Officer of the Crossing Brigades and will normally consist of representatives of elements similar to those in the CFHQ. For example, if a Corps MP Company has been assigned to the division for the crossing, the Company HQ would be part of the CFHQ. Assuming that a platoon of the MP Company supports a crossing area, the platoon HQ should be part of the CAHQ.

From an engineer point of view, the command struc-

ture is simple (hopefully, it is always!). The CFE will command all engineer assets employed in the CA. The engineer HQ, subordinate to the CFE and located at CAHQ, will probably be provided by an Assault Float Bridge Company or a company from a Corps Combat Battalion. The most preferable solution would be to use the HQ of the Assault Float Bridge Company. It is larger than that of a line company and organically commands the platoons constructing the bridges and rafts. Communications with the crossing sites are also available if this structure is employed.

Doctrine suggests that the Assistant Division Commander (Maneuver) will be the Crossing Force Commander. At some time during the battle, he will want to cross the river. The question is when? And who will control the Crossing Areas after the CFC crosses the river?

The ADC(M) would logically cross the river once all the artillery has crossed. Most of the division's combat power would be across and the ADC(M) would be primarily interested in expansion of the bridgehead. The person who should control the CAs once the CFC moves is the Crossing Force Engineer (CFE). He will have an intimate knowledge of the CA because he and his staff will have done the detailed planning.

An additional reason is that he commands all the engineer assets in the CA which revert back to Corps control after the division crosses. He, therefore, provides the Corps Commander with the ability to regain control of the area. As a result, the transition from division to corps control should be smooth. Doctrine should address the handover of the CA.

It should be apparent that a large number of communications nets are required. In the crossings of the Main River by First Armored Division in Reforger 79, seven radio nets were employed in the Crossing Area, all of which emanated from one CA Command Headquarters. The electronic signature would be easily detectable. The potential use of tactical nuclear weapons on the integrated battlefield, currently being emphasized, makes such HQ very vulnerable.

The use of line, as suggested in current doctrine, therefore becomes a major contributing factor in the survival of the headquarters. The problem will *not* be a capacity to lay line; this can be done when all routes in the CA are marked. Insuring that sufficient line is available will be the prime consideration.

Traffic control is the backbone of the organization for a river crossing operation. It is the tool used to get units through the CAs as quickly as possible. It therefore deserves consideration.

Doctrine suggests that CACs have operational control of all units within or passing through the CAs. Logically, a Traffic Control Post (TCP) will be established at the boundary of the CA to give the CAC the required control. However, the CAC will need to know more than just when a unit reaches the boundary. He will want to know when a unit is moving.

There are two ways of communicating this. A TCP can be established at the Staging Area outside the Crossing Area. The major disadvantage of this is that it further increases the size of the traffic control net.

An alternative method is for the crossing unit to send a representative, probably the XO, to CAC HQ. This may negate the requirement for the crossing unit to join the CA command net. It also allows the crossing unit commander to focus his attention on his primary objective, the far bank.

The suggestion in current doctrine that Engineer Regulating Points (ERPs), be co-located with TCPs, has the advantage of reducing the requirement for engineer communications. This sounds fine in theory. However, the traffic control net is likely to be heavily loaded—a division has some 4000 vehicles. While a TCP and an ERP may be co-located, it would be preferable if the squad manning the ERP had it's own communications.

Routes also deserve further consideration. There will be return traffic, e.g., empty ammunition vehicles, ambulances, etc. A separate route should be established for return traffic. This will prevent congestion and confusion.

A last word on ERPs. The requirement to technically inspect vehicles prior to crossing to insure that they match the crossing means has been somewhat neglected, primarily because current bridging and rafting assets can carry any vehicle in the division. But this requirement should not be forgotten, because heavier vehicles than those within a division will eventually cross.

Is an ERP required at the crossing site, as doctrine suggests? The answer must surely be no. The command element of the engineer ogranization which constructs the crossing means will be at the crossing site. It will probably be a platoon headquarters. An ERP would be redundant.

CONCLUSION

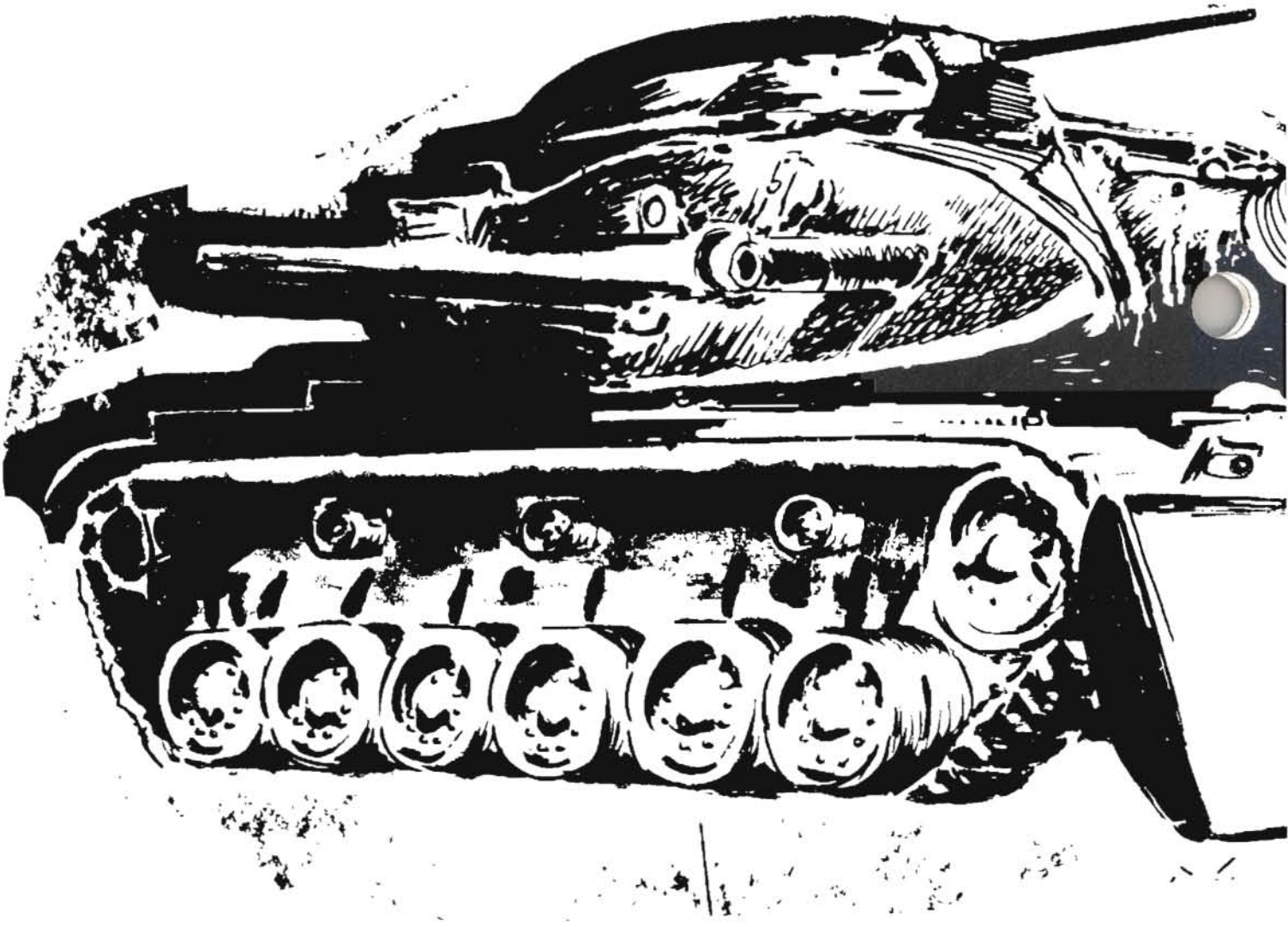
My intent is not to criticize FM 90-13, because I believe it is a good manual. There are some aspects, however, that require further consideration. Military history can be a good tutor and the lesson which comes through from all successful assault river crossings is the *attention to detail* required and the *critical importance of the engineers*. What I have attempted to do is emphasize some areas where more attention to detail is required. If you do no more than think about it, then I have achieved my aim.

Major Douglas J. George is the Royal Australian Engineer Exchange Officer at the US Army Engineer School, Fort Belvoir, VA. He is currently serving as Assistant Chief, Tactics and Operations Division, Department of Combined Arms, Directorate of Training, USAES.

Play It Again

Wargames simulations are tools to help the commander attain the unit efficiency needed to succeed on the next battlefield

by CPT Denis Gulakowski



The map sheet indicates Germany. Hunfeld specifically. A US armor heavy team occupies its battle position, waiting for lead elements of the approaching Soviet column to come within TOW range.

The first vehicles pass the invisible line that marks the beginning of the shooting gallery, but no defensive fires initiate. The PT 76s, the BMPs, and even the T-72s are ignored in anticipation of more lucrative targets. It is only when the BRDMs and roller-equipped tanks leave sanctuary that flashes erupt as TOW gunners acquire and engage. Artillery from both sides starts dropping as the contact heats up. The US combat ratio improves with the grass-hopping arrival of Sierra model TOW Cobras. Several vehicles are destroyed, many of them US . . . .

The map sheet changes. The blue combat engineer battalion symbol is grease penciled in close to the Imjin River. A startling number of red grease pencil symbols adjoins it, all too closely. Inside the Tactical Operations Center (TOC), the commander has assembled his principal staff, none of whom has slept in the last 16 hours. The Herman Nelson heater in the center of the TOC has long since died, another victim of the POL interruption, but the staff huddles around it from habit.

The commander hands out five manila foldered packets, which describe the latest mission. He requests a recommendation within one hour. Each individual accepts the packet and begins leafing through it to determine, among other things, what is preempting the planned hour of sleep.

Again the scene shifts, this time north to Alaska. A squad leader is planning a move to a job site which may very well be in hostile terrain and far from indirect fire support. The movement planning necessary includes troop transportation, relocation of materials, and route security. The task calls for a demonstration of critical leadership skills.

The leader estimates the materials he needs, checks his vehicle status, breaks down the load, determines distance to the job site, computes travel time, lists work tasks, selects personnel . . . .

Some might consider the aforementioned situations as fiction, events of the next conflict involving the US, or excerpts from Hackett's *Third Word War, August 1985*. Others might recognize them as typical examples of training in which they have participated.

The scenarios are realistic and fabricated deliberately to approximate the combat environment for which all soldiers ultimately train. They are presented in one of the fastest developing formats of army skill improvement programs. The scenes described are from three of the current wargames simulations that are receiving much emphasis and much interest, and are representative of what participants face throughout the exercises.

The first scenario represents routine action of a computer assisted engagement simulation known, surprisingly, as *BATTLE* (Battalion Analyzer and Tactical Training for Local Engagements). The purpose of *BATTLE* is to train soldiers in the combined arms concept and to integrate and represent all aspects of a 1980s battlefield. Inherent on such a battlefield are terrain use, weapons lethality and employment, task organization, tactics, logistics, and most importantly, coordinated interaction of all types of forces—maneuver, support, and service support. Through the realism of the third dimension and the speed of electronics, many factors are coalesced into a unique system that accurately represents combat.

BATTLE participants plot strategy

A three-dimensional scale terrain board becomes the battlefield and 1/285 scale miniatures serve as vehicles. Both US/NATO and Soviet Warsaw Pact Forces, including tanks, armored fighting vehicles, personnel carriers, antiarmor guided missile systems, air defense systems, attack helicopters, artillery, supply vehicles and, as promised, engineer vehicles are portrayed.

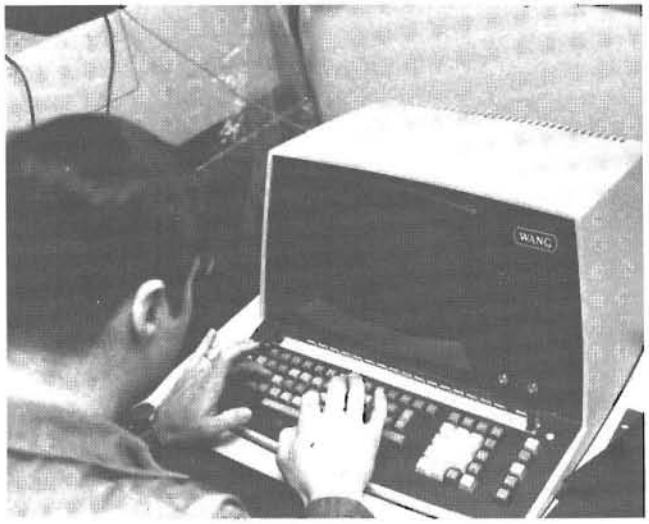
The exercise is what is known in systems design terminology as "open." That is, it provides for free play between two thinking, reacting forces, with input from the exercise causing subsequent behavior. Controllers merely serve as monitors (provided the players are skilled) and umpires to interpret rules or judge ambiguous circumstances.

The choice of scenario, too, rests with the participants or training unit, and the area or theater of operation is limited only by the terrain boards available. The detail and preciseness of the simulation is such that it allows direct fire engagement. For example, each individual weapon system that is found in units up to US Battalion/Task Force size and Soviet Regiment is provided. Similarly, indirect fire of mortars and howitzers is accurately portrayed.

If the term "computer warfare" comes to mind, it may be dismissed, inasmuch as the computer does not fight the battle, but merely does the bookkeeping for the exercise. With the appropriate input, the computer (a Wang VP 2200 and assorted peripherals) resolves direct fire engagements, assesses indirect fire results, states the outcomes of air-ground duels, maintains a running status on every system on the board, records ammunition expenditure, tallies personnel and vehicular casualties, and calls up visual and/or printed instant replay. It even allows participants to look ahead to see what will happen in a given situation. All outcomes are determined by performance tables, probabilities of hits and kills, systems characteristics, and lethality tables stored in the computer, rather than by the hot hand of a good craps shooter.

Within these *general* systems is a *specific* system of particular interest to engineers—realistic engineer play. The engineer tenets of mobility, countermobility, and survivability are depicted in the engineer rules supplement developed by The Engineer School. Obstacle employment, obstacle breaching, fighting position construction, and most other elements of combat engineering can be used as they would be on the battlefield. Miniscule Combat Engineer Vehicles (CEVs), Armored Vehicular Launched Bridges (AVLBs), and D7s are part of the force inventory, as are comparable Soviet assets. The accompanying data of employment times, clearing times, P_H, P_k, material requirements, and the like are also found in computer memory, so that engineer effort is correctly represented. After all, engineers are an integral part of the combined arms team.

BATTLE, unfortunately, cannot be found at the downtown games and hobby store, or even the local computer hobby center. In fact, anyone outside of Fort



WANG VP 2200 computer does the bookkeeping

Leavenworth, Fort Benning, Fort Knox, Fort Sill, White Sands, or Fort Belvoir, would be hard pressed to even find a *BATTLE*, let alone use it. The reason is that only at these locations does *BATTLE* exist, and, with the exception of Leavenworth and White Sands, only evaluation and testing is being conducted. Should tests prove the utility of the system, it may be expanded to other installations, including OCONUS where it can be tailored for specific local use. In any event, the possibilities of such a simulation are staggering.

What about the second scenario? Although it could be from a *BATTLE* exercise, it is not. Instead, it dramatizes a unit conducting a tactical taining exercise by using the innovative *Engineer Staff Exercise*, or *ESEX*. Three years ago USAES identified a need for a vehicle to provide meaningful training for engineer battalion staffs. At the time, there was little information available that established the elements of an effective and successful staff. There were volumes of what a good staff officer should do, how he should do it and why he should do it, as well as guidelines on the technical tasks of various staff positions.

But, military literature explaining why any army unit staff, let alone an engineer battalion staff, was successful, was virtually nonexistent. Therefore, prior to the development of techniques to train a staff to perform well, successful performance had to be defined. Fortunately, the research story has a happy ending. There was sufficient material of a comparable nature from the civilian sector and other services, coupled with intense research effort, experimentation, and information gathering, to yield a workable definition of critical staff functions, and later, the means to observe and measure these functions.

The end product, ESEX, scheduled for validation this year, will enable an engineer battalion commander to compose a staff effectiveness profile, comprised of specific strengths and weaknesses, and to train his staff to meet performance goals. The exercise is in three parts, Phases I, II, and III, identified as Individual, Collective and Combined. ESEX can be conducted in a garrison or field environment in as few as three sessions ranging in duration from two to four hours each. Based on the outcome of each phase, the commander can consult the performance improvement training recommendations, add his own experience and unit requirements, and devise his own program of staff training. As with *BATTLE, ESEX* is not available to the general consumer. If the validation and evaluation is as favorable as the preliminary response to the Phase I and Phase II prototype checkout, engineer battalions worldwide will have another training tool in the inventory by early next year.

The third scenario shows how simulation can enable lower echelon leaders to improve skills used in day-to-day unit operation. The two described simulations do not exercise the squad leader, platoon sergeant, and platoon leader on routine tasks, and consequently leave somewhat of a training void.

The answer for engineers is the Combat Engineer Game (CEG), a military and engineer mission knowledge game requiring demonstration of basic planning and organizing abilities. It is a "monopoly" type game, in that it uses a nontactical gameboard, as opposed to a terrain model or map, and game markers to designate units and types of transportation. From one to five players may participate independently or competitively, and can play the game virtually anywhere. Players draw typical engineer missions, based on SQT and ARTEP requirements, plan allocation of resources, and move to job sites by correctly answering questions. Once at the job site, the player is queried via question cards on technical aspects and requirements of the mission. He accumulates points for correct answers.

The numerous missions related to mobility, countermobility, and survivability provide a broad cross-section of tasks about which engineers should be knowledgable. The game serves as a measure of knowledge as well as a means of skill-improvement. It also provides a different approach to teaching and training first line supervisors. The good news is that production has begun and sufficient quantities should be available at the local TASC by October.

I have briefly described three recent efforts in wargames and engagement simulations that are being studied and/or implemented to train soldiers worldwide. A major concern is the cost and training effectiveness of any system being developed. Obviously more dollars are needed to buy the speed and sophistication of electronic hardware. But the ability to reproduce the battlefield and challenge the people who work on that battlefield without the expense of training ammunition, POL, schedule juggling, training area and range construction, and travel requirements is highly sought.

Simulations such as *BATTLE, CEG*, and *ESEX* are not the sole answer to better, more cost-effective training. They are merely tools to help the commander bring his unit to the level of efficiency necessary to succeed in the next battlefield.

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Beyond the Call

It was February 27, 1945. PFC Herman C. Wallace and several other members of the same unit—Company B, 301st Engineer Combat Battalion, 76th Infantry Division—were given the task of clearing enemy mines from a road near Prumzurley, Germany.

Suddenly, Wallace heard a sound which he had learned to fear, the sound of a mine being activated. He had stepped on the mine himself.

Wallace's first inclination was to dive for cover, but he must have known that such a reaction would mean certain death for the two comrades trailing in his footsteps and probable injury to many other comrades.

Without a moment's hesitation, Wallace placed his other foot on top of the enemy mine to prevent it from springing overhead to explode. Wallace was the only casualty.

He died instantly.

For gallantry in battle, PFC Wallace was posthumusly awarded that highest of military honors, the Medal of Honor. He became the tenth Army engineer in our history to receive the nation's most distinguished award.

The first engineer recipient of the Medal of Honor was Sergeant Major Frederick W. Gerber in 1871 and the most recent recipient was Corporal Terry T. Kawamura in 1969. Thirteen other Corps of Engineers officers and soldiers, including Wallace, were presented the Medal of Honor between 1871 and 1969.

Some of the 15 recipients, like PFC Wallace, were killed in action. And most of them were

SGM Gerber

1LT Wilson

1LT Gillespie

1LT Benyaurd

SGT Colyer

honored for a single, specific act of valor. But some, like Gerber, were honored for distinguished and faithful service over a period of years. Gerber received the Medal as a climax to 32 years of meritorious service to his country.

On the heels of Gerber's award came the Civil War, during which three more U.S. Army engineers were presented the Medal of Honor—Lieutenants John W. Wilson, George L. Gillespie, and William H.H. Benyaurd. Wilson and Gillespie each later served as Chief of Engineers.

Following the Civil War, more than half a century passed before the Medal was awarded to another Army engineer. It was during World War I, on October 9, 1918 when Sergeant Wilbur E. Colyer of Company A, 1st Engineers, 1st Infantry Division displayed courage and valor beyond the call of duty near Verdun, France.

Colyer single-handedly wiped out a group of German machine gun nests with grenades and the enemy's own weapons. He was later killed in action.

World War II Medal recipients included Private Junior Van Noy of Headquarters Company, Shore Battalion, 532nd Engineer Boat and Shore Regiment; Sergeant Joe C. Specker of the 48th Engineer Battalion; Technician 4th Class Truman Kimbro of Company C, 2nd Engineer Combat Battalion; PFC Wallace; and General Douglas MacArthur.

MacArthur, an engineer officer for 15 years of his distinguished military career, was cited for his conspicuous leadership against Japanese forces in the Pacific,

PVT Van Noy

SGT Specker

T4G Kimbro

PFC Wallace

GEN MacArthur

including the defense of the Philippine Islands and the Bataan Peninsula.

Korean War Medal recipients included Sergeant George D. Libby of Company C, 3d Engineer Combat Battalion; PFC Melvin L. Brown of Company D, 8th Engineer Combat Battalion; PFC Joseph C. Rodriguez of Company F, 17th Infantry Regiment; and Corporal Dan D. Schoonover of Company A, 13th Engineer Combat Battalion.

The only engineer soldier to receive the Medal of Honor since the Korean War was Corporal Terry Kawamura of the 173d Engineer Company, 173d Airborne Brigade, during the Vietnam Conflict. Kawamura's heroic deed occurred on March 20, 1969 when an enemy demolitions team infiltrated the unit headquarters area at Camp Radcliff. His award, presented posthumously, states that he disregarded intense enemy fire and opened fire with his own automatic weapons. Passing up a chance to escape, he then threw himself on an enemy explosive to protect other members of his unit.

Gerber, Wilson, Gillespie, Benyaurd, Colyer, MacArthur, Van Noy, Specker, Kimbro, Wallace, Libby, Brown, Rodriquez, Schoonover, and Kawamura.

Names to remember.

Some gave their lives, others total dedication, but all distinguished themselves "conspicuously by gallantry and intrepidity at the risk of life above and beyond the call duty while engaged in an action against an enemy of the United States."

SGT Libby

PFC Brown

PFC Rodriguez

CPL Schoonover

CPL Kawamura

THE 7TH ENGINEER BRIGADE

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

by MAJ Al Bornmann & SGM Larry David

Every military commander who ever engaged an enemy would have preferred to physically alter the battlefield in his own favor. In this respect, the first cave man to roll a stone into the path of his enemy may have pioneered combat engineering.

Rolling stones has not been eliminated from the combat engineer mission, but reconfiguration of the battlefield has grown vastly more technical. From defensive obstacles to airfields, roads, and bridges in support of the offense, today's combat engineers have the capability to alter the course of war.

Enter then, the 7th Engineer Brigade of VII U.S. Corps, located in southern Germany near France and Switzerland. The 4,300 men and women of the 7th Engineer Brigade comprise six battalions and two separate companies spread throughout the Corps area of operations (AO).

The 7th Engineer Combat Brigade was born of wartime need, activated on Biak Island, Philippine Islands as the 5202d Engineer Construction Brigade on June 16, 1944. The Unit participated in the New Guinea, Leyte, and Luzon Campaigns of World War II, earning the Meritorious Unit Citation.

Designated as the 7th Engineer Brigade on October 1, 1948, it moved to Fort Belvoir, VA. In the 1950s the Brigade relocated to Rhein-Main Air Base, Frankfurt, where it coordinated construction missions in Europe for the next 15 years. The most recent move occurred on June 14, 1969, when the Brigade moved to its present location at Ludendorff Kaserne, Kornwestheim, Germany, where it is currently commanded by Colonel Jerome B. Hilmes.

The 7th Brigade mission is to provide combat engineer support to VII Corps. It does this by enhancing the mobility and survivability of Corps maneuver units, and by degrading enemy mobility and flexibility. The Brigade is organized to accomplish its mission as shown in Figure 1.

To insure that troops are ready to fight and win the first battle, the General Defense Plan (or War Plan) was formulated as the driving force behind Brigade training. ARTEP tasks have been adjusted to specific unit war missions. Company and Battalion evaluations are conducted at least annually, and preferably during combined arms exercises. Evaluations of squads and platoons are conducted frequently to insure sustained combat readiness. Training has been decentralized to the lowest possible level, with NCOs supervising most of the training.

Creating road craters at Hohenfels

Combined arms training is maximized by participation in every maneuver Brigade, Division, and Corps FTX and CPX. Concurrently, each Brigade unit trains with a "Partnership" unit whenever possible.

Small unit training is anchored to annual programmed training activities at Brigade level, and includes an annual bridge training exercise, an engineer MTA period, the NBC Olympics, the

Combat Engineer Major Training Area Program, and major exercises directed by higher headquarters. Innovative training is encouraged.

The Brigade has made significant improvements in its Nuclear/Biological/Chemical (NBC) defense posture and is emphasizing full integration of NBC operations into training programs and ARTEPs. The culmination of this training is an annual NBC "Olympics." Competition includes both individual and team events, and Olympic style

completing a variety of other road and range maintenance tasks. Last year, the Brigade's CEMTAP effort was six battalion months plus 12 reinforced platoon months, with a program cost of almost $1 million.

REFORGER 79 was the first large scale FTX in recent years that was conducted during winter months. More that 7,000 engineers from USAREUR, NATO, and CONUS participated. Every Brigade unit was committed during the

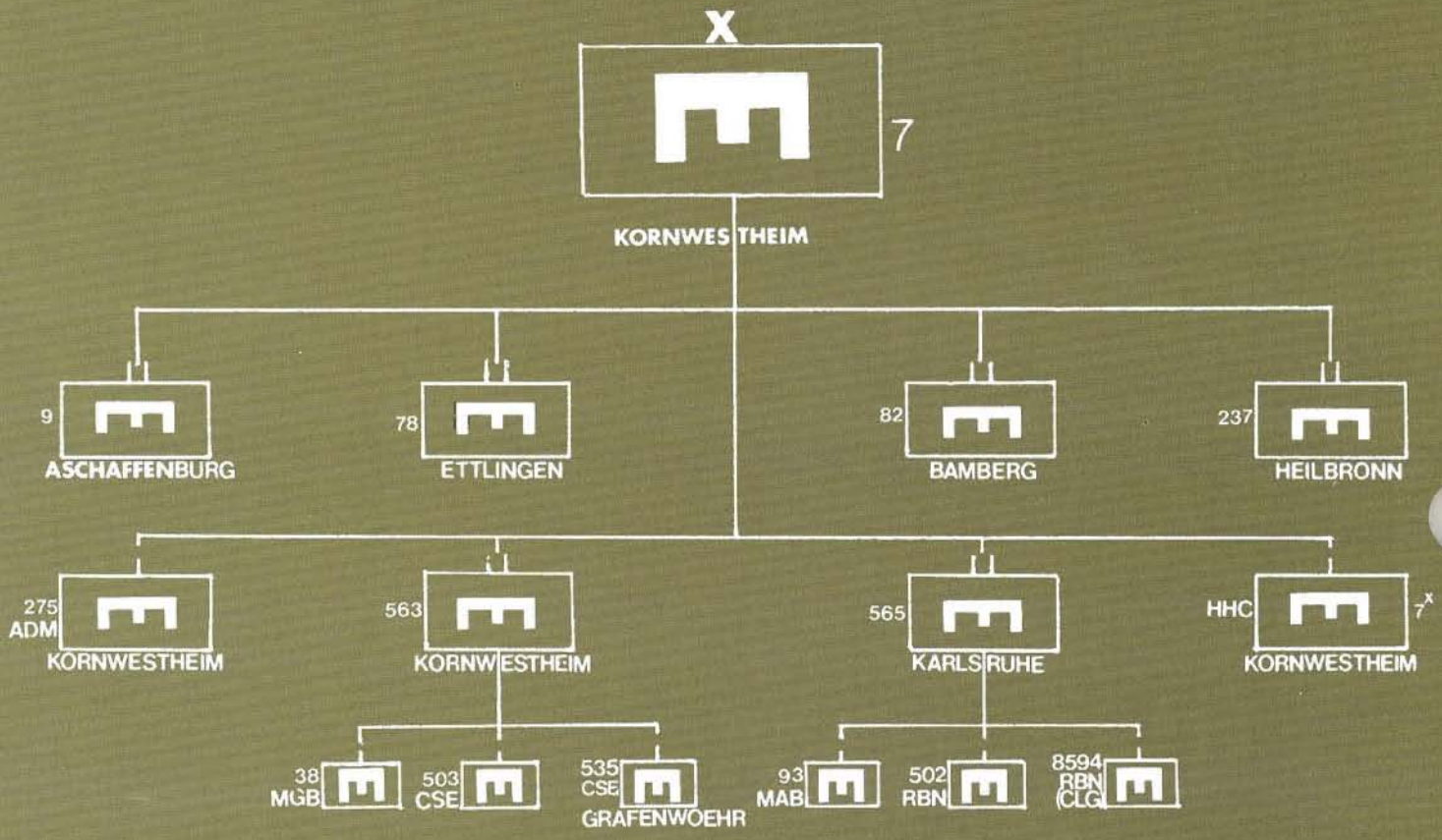


FIGURE 1

medals are awarded to the winners.

Among the more significant Brigade activities is the Combat Engineer Major Training Area Program, or CEMTAP. It begins in April and ends in September of each year. Each combat battalion is alloted one month at Brigade training areas to perform general mission training support of 7th Army Training Command. Each battalion conducts combat engineer training in areas and ranges of opportunity, such as the live demolitions range and the firing range. Additionally, the 563d Engineer Battalion spends two months upgrading and reinforcing tank trails at Grafenwoehr, and

exercise, since the Brigade was responsible for providing players, umpires, control and repair of maneuver damage, and construction support to include the Corps CTOC and the staging area for CONUS units.

In addition to the Brigade's dynamic training program, other initiatives have been taken to improve its ability to execute the GDP. Barrier and munitions stockage requirements were surveyed, shortfalls were identified, and repositioning actions were directed. The Corps' engineer task organization was revised to provide more engineers up front. The Brigade has held map

exercises, Class V upload, and barrier haul exercises to improve its ability to conduct barrier and denial operations well forward. Engineer control and organization in the maneuver brigade areas has improved with the use of a Brigade task force engineer (a major) who typically controls two engineer companies in each Brigade AO.

The Brigade has intiated several innovative programs to intensify individual training and increase the quality of life for its soldiers. Last year, it administered the performance-oriented components of the SQT for more than 1,800 Combat Engineers in VII Corps. The Brigade also applies the "team-building" concept in daily training and maintenance activities by requiring squads and platoons to undertake and complete difficult or dangerous tasks and to make important decisions at small-unit level.

In order to help the soldiers grow and prosper, a "How To Make It" program was developed. In brief, the program teaches new soldiers how to succeed as soldiers. It trains them to establish goals and it teaches personal assertiveness.

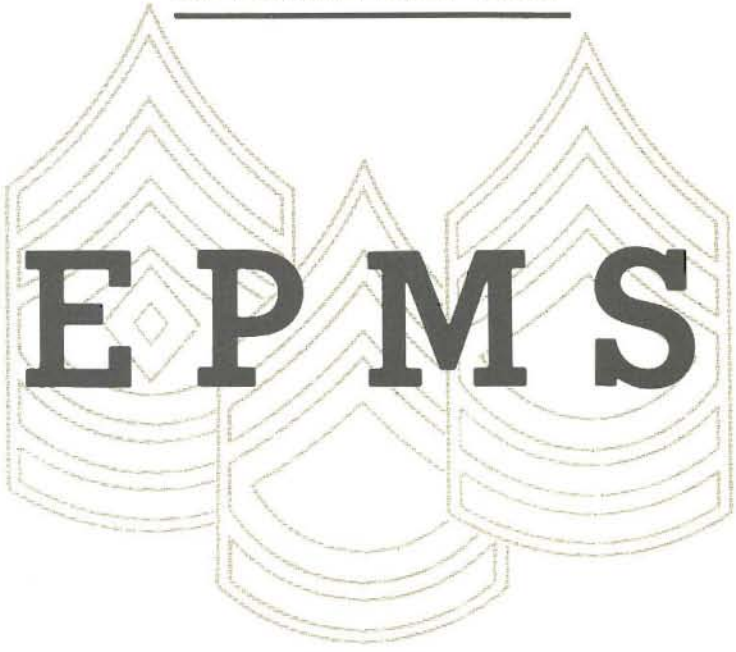
Another Brigade program, called "ACTIVE," is a barracks reach-in program designed to involve soldiers in healthy leisure activities during off-duty hours. It provides alternatives to drugs and alcohol. and "barracks rats" activities.

The future holds great things for the 7th Brigade. Mechanization for the combat battalions will improve their mobility and survivability on the battlefield. New equipment items are being developed and fielded which will improve the engineers' ability to support maneuver units. The quality and level of training is steadily rising. If you want to be where the action is, join the 7th Engineer Brigade, the Army's leader in Combat Engineering!

Constructing M4T6 Deck Balk Bridge with intermediate support

Major Al Bornmann is a former S-3 of the 7th Engineer Brigade. He is currently attending the Air Force Command and General Staff College. Sergeant Major Larry David is a former Operations NCO of the 7th Engineer Brigade. He is currently serving as the Senior Enlisted Advisor to the Adjutant General of Missouri.

SPECIAL REPORT



In 1974, the Army began overhauling the system used to train, test, classify, and promote enlisted soldiers. The project was called the new Enlisted Personnel Management System (EMPS). Many changes have taken place since then and more changes are forthcoming with the complete revision of AR 351-1, Individual Military Education and Training. This article is excerpted from a status report on EPMS prepared by the EPMS Task Force Office, Enlisted Personnel Management Directorate, US Army Military Personnel Center.

The Enlisted Personnel Management System (EPMS) is a professional development cycle which begins and ends with *training*. It includes an *evaluation* of what soldiers know about their Primary Military Occupational Specialty (PMOS) and a determination of how well they perform on the job. This is recorded through the submission of Enlisted Evaluation Reports (EERs). *Classification* and *promotion* serve to recognize the actual accomplishments and potential of those soldiers identified as the Army's best leaders.

TRAINING

Not much has been written about the details of the soldier's education system. This is training which is necessary to train NCOs to perform their jobs competently and to train them to train soldiers on their individual tasks. Because most individual training has to be done in units, the key to force readiness is to have trained NCO trainers.

Improvements in the Noncommissioned Officer Education System (NCOES) during the past five years were aimed at providing better quality training to match job requirements for all NCOs.

There are four *levels* of training within NCOES: primary, basic, advanced, and senior. *Primary* level training is skill level 1 training (E1 through E4) for skill level 2 (E5) duty positions. It includes the Primary NCO Course (PNCOC), the Primary Leadership Course (PLC), and the Primary Technical Course (PTC).

PNCOC is a combat arms leadership course for 16 MOS. PLC is also a leadership training course, but is designed for 253 combat support and combat service support MOS. PTC is an MOS proficiency training course designed for 23 additional combat support and combat service support MOS.

For example, Combat Engineers (MOS 12B10) would attend PNCOC, whereas Heavy Tractor Operators (MOS 62E10) and Crane Operators (MOS 62F10) are eligible to attend PLC.

NCOES *Basic* courses are designed to train E5s at skill level 2 for skill level 3 (E6) duty positions. Basic NCO Course (BNCOC) is a combat arms proficiency course for 14 combat arms MOS, while the Basic Technical Course (BTC) is tailored for 34 combat support and combat service support MOS.

Advanced NCO Courses are designed to train E6s at skill level three for skill level four duty positions at the E7 grade level. ANCOC is a combat arms proficiency course for 14 MOS, while ANCOC, CS/CSS is a proficiency course for 190 combat support/combat service support MOS.

Senior NCO Courses are designed to train E7s at skill level four for skill level five duty positions at the E8/E9 grade levels. However, senior NCO courses are virtually non-existent at present. Except for a few SNCOCs which cross many MOS (operations/intelligence, first sergeant, etc.), it has been determined through experience that the technical skills required for most MOS do not differ much between E7 and E8/E9 duty positions.

There is no requirement to develop an NCOES course for each skill level. That decision is left to the proponent service school. Training requirements for each MOS are different. Existing training plans reveal that for most MOS, resident training will be available *either* at the primary or the basic level, but not both. It appears that most MOS will have a resident ANCOC. Also, that there will be few, if any, resident SNCOCs.

In reality, most individual training takes place in units. Most of the training is provided by NCOs under the management of the company officers. Although technical and tactical proficiency is needed, it's not enough. NCOES must produce more trained trainers. To that end, service schools are putting the "train the trainer" tasks developed by the Army Training Board into the NCOES courses.

EVALUATION

The Enlisted Evaluation System (EES) provides information on how well soldiers are doing—individually and collectively. The system has two parts. The first is the Skill Qualification Test (SQT) which measures Primary MOS know-how. The second is the Enlisted Evaluation Report (EER), in which duty performance is evaluated. Thus, the EES measures actual day to day performance, as observed by supervisors (EER/SEER), and through PMOS-critical task knowledge (SQT).

THE SQT

Skill Qualification Tests (SQTs) are replacing the old MOS tests. In fact, MOS testing was terminated in January 1977. SQTs are aimed at tasks the soldier must do. Further, they are based on tasks listed in the Soldier's Manual for the grade the soldier holds.

SQTs are performance-oriented tests designed to evaluate the soldier's ability to perform the critical tasks required of that MOS at the skill level of the current grade. However, that's not the whole story. These tests are but one step in improving the overall readiness of the unit for combat.

SQT is a total concept of training, testing and follow-up training, which is the continuing aspect of the program. The retention aspect of trained tasks is also one of the key features.

Most SQTs include three components: A Skill Component (SC), which used to be known as the Written Component (WC); a Hands-on Component (HOC); and a Job-Site Component (JSC), which used to be known as the Performance Certification Component (PCC). SC tasks are aimed at testing the soldier's ability to perform critical tasks that are almost entirely mental. Different devices, such as TV tapes, will be used in addition to written questions to test this portion. HOC tasks test the soldier's ability to perform critical tasks on actual job equipment or simulators.

The JSC will allow a supervisor to observe and score a soldier's performance on certain other tasks during a period prior to the actual SQT date. This aspect is particularly critical because of the time and resource constraints surrounding test (SQT) day. SQTs currently being developed will be shorter, more easily administered, and will contain some questions in each of the components.

The Manual for Administration of the HOC (MAHOC), guide to setting up the HOC, is available for review and can provide added assistance, in that commanders can set up "practice" HOC situations.

In addition to preparing soldiers mentally to take the test, this procedure will also give them practice in performing critical tasks. Other valuable aids include the Commander's Manual (CM) and the Soldier's Manual. The CM describes for the battalion and company level commander his responsibilities in the overall training plan for a particular MOS. It lists all critical tasks for the MOS, study materials and references to conduct training, and includes information about where each task is taught (e.g., in training centers or units).

The Soldier's Manual lists for the soldier those critical tasks needed to perform satisfactorily at his present skill level and, to some degree, at the next higher skill level within his MOS. Additionally, it tells him eactly how to perform the tasks, and prescribes the standards which must be met. All tasks tested are lifted directly from the Soldier's Manual.

For the first-line supervisor, a Job Book is provided to aid in keeping track of the training and performance of his subordinates. The Job Book lists each critical task from the Soldier's Manual and provides columns for checking a *GO* or *NO-GO*, along with the date on which the NCO last checked the soldier's competence in the task.

Job Books are available for inspection or inventory by

those who have a "need to know." It is important that supervisors insure they are kept up to date, for their contents can be used as verification for JSC tasks. The first-line supervisor can also use the Job Book to insure that work experiences (another form of training) are being distributed among all the soldiers.

Prior to SQT day, unit commanders receive a roster for verification of individuals to be tested. He must insure that new arrivals are added to the roster and that departed soldiers are deleted. The commander also insures that all soldiers are interviewed to identify the appropriate track (if it is a tracked SQT) for which they must prepare. Track or career progression decisions should be made as early as possible for the benefit of the soldier.

On SQT day, the commander should insure that all eligible soldiers are available for testing. Unit details should be assigned to ineligible soldiers. Emphasis on specific Soldier's Manual tasks and insistance upon test attendance will have tremendous influence upon the test results and upon the ability of the unit's soldiers to perform in the "first battle" where MOS ability will be crucial.

Soon after the SQT answer sheets are forwarded by the TCO, the commander will receive an Individual Soldier's Report (ISR) indicating not only the score received by the soldier, but also a listing of the tasks not passed. The ISR comes in two copies—one for the soldier and one for the commander.

When the soldier is counseled on his SQT performance, he should be encouraged to pursue an individual training program to supplement the unit training program in areas of weakness. NCO supervisors can be a big help in aiding soldiers to improve in these areas.

SQT is a continuous and total program. A continuous review of the training program insures that needed background is given to each soldier so that when the "move out" order is given, each member of the unit can do the job. When every soldier knows how to do the job and is properly led, the mission will get done. That's what the Army is all about.

CLASSIFICATION

This part does not deal with awarding or classifying soldiers in an MOS as a result of service school completion, physical profiles, or enlistment options. Instead, it examines how the MOS award will be used to identify the level of competence of the soldier in an EPMS environment.

EPMS was designed to enable soldiers to demonstrate their potential for promotion through training and evaluation. Once this was accomplished, the Army needed some way to capture this information.

The device used to do that job—the glue which ties together training, evaluation, and promotion—is the Career Progression MOS (CPMOS).

The CPMOS is a new feature of EPMS, and all soldiers, except sergeants major, will have one. By definition, the CPMOS is that MOS to which all soldiers will progress when promoted. The steps of normal progression for each primary MOS, including MOS 12B10, 12C10, and 12E10, are pictured in the flow diagrams of AR 611-201.

The fourth digit of the CPMOS is the important one. If soldiers are not yet qualified for the next higher skill level, the fourth digit (which denotes skill level) will be a zero (example: 12B0). For qualified soldiers, the fourth digit will show the next higher skill level. For example, an E5, with a PMOS of 12B20 who has completed on-the-job experience (OJE) or NCOES and scored at least 80 percent "GO" on his SQT, would have a CPMOS of 12B30.

On-the-job experience is defined as service in a primary MOS for a period of time. It is necessary to provide an alternate means for soldiers to qualify for the awarding of a higher skill level in the CPMOS or for promotion, if the soldier cannot get to school or if the NCOES course has not yet been fielded for his MOS.

The single biggest factor affecting promotion is what the Army needs in the soldier's Career Progression MOS.

In sequence, the Soldier's Manuals tell what soldiers must be able to do; NCOES/OJE provides them with training to learn the skills of the next higher level; the SQT measures how well they know their PMOS; the EER measures how well they do their duties; and the Army recognizes the importance of trained soldiers to mission accomplishment by rewarding them for professionalism and potential through promotions.

PROMOTION

Soldiers who have successfully completed the training and evaluation process, and who have been awarded the CPMOS with the next higher skill level, are considered to have the skills and knowledge to perform at the next higher level. Provided they are otherwise qualified, they are fully eligible for promotion.

The single biggest factor affecting promotion is what the Army needs in the soldier's career progression MOS (CPMOS). The commander's recommendation, necessary time-in-grade, time-in-service, and education are all necessary factors to be considered in the promotion process. However, by proving ability to perform by scoring high on the SQT, soldiers can enhance their probability of promotion. There are three different levels of promotion: decentralized (E2-E4); semi-

centralized (E5 & E6); and centralized (E7-E9).

Promotions to grades E2 through E4 are controlled by local unit commanders. Certain waiver authority is authorized to that level, depending on the number of higher grade vacancies in the unit and on the number of soldiers assigned who could qualify, if a part of the time-in-service and time-in-grade requirements were waived.

Promotions to grades E5 through E6 are recommended by the field commander, but controlled by a DA cut-off score system. Promotions are determined by the number of promotion points in each MOS needed to meet or exceed the DA cutoff scores. Up to 300 promotion points can result from a combination of MOS knowledge (SQT results) and demonstrated duty performance. Soldiers in grade E4 can receive up to 150 points from their commanders, while E5s acquire points based on EER scores. The higher the Enlisted Efficiency Report Weighted Average, and the higher the SQT scores, the more promotion points will be awarded.

The new 1000-point worksheet provides more opportunity for the soldier of today to acquire points by doing better in those things he can positively influence, such as education, awards and decorations, and the evaluation process. A recent change to the semi-centralized promotion system allows soldiers who score 60 points or higher on their SQTs to compete for promotion. However, commanders can exercise one of their two waivers to recommend soldiers who score 59 or lower.

Promotions to grades E7 through E9 are centralized by DA selection board and based on the "whole person" concept. Promotion boards are very interested in PMOS proficiency (SQT results) and in the "comments" contained in the Senior Enlisted Evaluation Reports (SEERs). Soldiers competing for promotion to these grades are considered only with others holding MOS in the same career management fields.

As can be seen, EPMS did not change the authority level to promote. However, it did establish an SQT standard as one of the eligibility criteria for the semi-centralized promotion system. It also arrayed points derived from SQT results in such a way as to give the soldier with a good score a better chance for promotion.

At some future time, the SQT standard may be declared unwaiverable, for both the centralized and semi-centralized promotion systems. But this will not happen until tests for all MOS are available and valid, soldiers are trained, and the standard judged to be appropriate. Meanwhile, commanders and soldiers should not become complacent.

The final objective in promotions is to establish a realistic standard for soldiers to compete against, instead of competing against other soldiers.

There is one part of the promotion system that is understood by too few commanders and soldiers. Authorization document (MTOE and TDA) vacancies are not fully covered by the budget that pays for promotions. For example, the Army has approximately 1,800 E8 and 10,000 E6 and E5 positions which cannot be filled by soldiers in the right grade because the dollars are not available to pay for promotions.

Consequently, the more vacancies that exist in a given grade and MOS, the more promotions that skill will likely receive. Under the semi-centrailized system, *soldiers holding different primary MOS do not compete for promotion*. They only compete with others in the same MOS and grade.

It makes little sense to promote soldiers in an MOS with no higher grade vacancies while other MOS have many. Inflation of the grade structure in authorization documents sometimes work to the detriment of soldiers because "bottlenecks" are often created which cause promotions to go to other MOS, where the total of Army-wide authorizations is more feasibly structured.

As a result of the authorization/budget problem, the Army must insure that it promotes only the best qualified and most able soldiers. Under EPMS, promotion potential is best demonstrated through training and testing (SQT), as well as through the other evaluation (SEER/EER) and classification (higher skill level in CPMOS) indicators.

The final objective in promotions is to establish a realistic standard for soldiers to compete against.

SUMMARY

Soldiers must be trained to stay alive and to accomplish missions. Commanders must evaluate training to insure that, from an individual and collective standpoint, the Army's readiness is maintained. Finally, there must be some form of management that will allow for the professional development of the soldier.

This article has described the continuing program of individual training, evaluation, classification at the next higher skill level, and promotion.

Both commanders and soldiers share the responsibility for making these programs work. Soldiers must be aware of and seek the challenge and opportunities available. Each soldier holds the key to his own future.

Professional development is a continuing process throughout the soldier's career. Remember the four building blocks of professional growth:

- Training (NCOES, OJE)
- Evaluation (EER/SEER, SQT)
- Classification (CPMOS with higher skill level)
- Promotion

EPMS is a closed loop system that starts and ends with training.

OFFICIAL MILITARY PERSONNEL FILE

Reviewing and updating the OMPF, especially the Performance fiche, is important for every officer. This responsibility becomes even more critical when an officer is in the zone of consideration for either promotion or school selection. This file contains most of the documents considered during the selection process. Included in the OMPF are OERs, awards and decorations, and the official photograph.

Officers must ensure that a current photograph is included in their OMPF. The photograph provides the only means for the board to determine the officer's military bearing, appearance, and physical stature. These are important factors in considering the whole person.

Keeping the OMPF updated is essential. The task of maintaining this file should not be left entirely in the hands of the MILPO or MILPERCEN. You are one of the key managers of your file. With the conversion of the OMPF to microfiche, the job of reviewing and updating the file has become simpler. Officers may, and in fact should, request a copy of their OMPF within a month or two of the scheduled convening date of any board which will be considering them for either promotion or school selection. Officers may obtain a copy of their entire microfiche by writing to Commander; MILPERCEN; ATTN: DAPC-PSR-SR; 200 Stovall Street; Alexandria, VA 22332.

REORGANIZATION OF OPMD—PHASE II

Phase II of the reorganization of the Officer Personnel Management Directorate (OPMD) at MILPERCEN was initiated in April. It is part of a four-phase plan intended to provide officers with long term continuity in career planning and personnel management. The new organization of OPMD is shown in Figure 1. The plan does not include any changes in the structure of the Colonels Division or the Warrant Officer Division.

During Phase II, company grade divisions will be reorganized into three career management divisions — (1) Combat Arms Division, (2) Combat Support Arms Division and (3) Combat Service Support Division. Each officer's career will be managed by a single career division from entry on active duty until selection for promotion to colonel. For example, if an officer is assigned to Specialty Code 21, the Engineer Management Section will manage the individual's career in both of his specialty areas.

Each new career management division is organized with a Personnel Support Branch, responsible for maintaining individual files and processing requests for orders; a Personnel Actions Branch, responsible for changes in career status and the correction of records; a Professional Development Branch, responsible for formal training/education programs and monitoring assignments; and an Assignments Branch, responsible for assigning officers worldwide.

The Assignments Branch will be further organized into management sections. For example, the current Engineer Branch will become the Engineer Management Section. Figure 2 provides a complete listing of new management section titles.

The objective of Phase II is to establish smooth functioning divisions before integrating the Majors and Lieutenant Colonels Divisions into the new structure. While very few officers will be affected during Phase II, a review will be conducted to ensure that all company grade of-

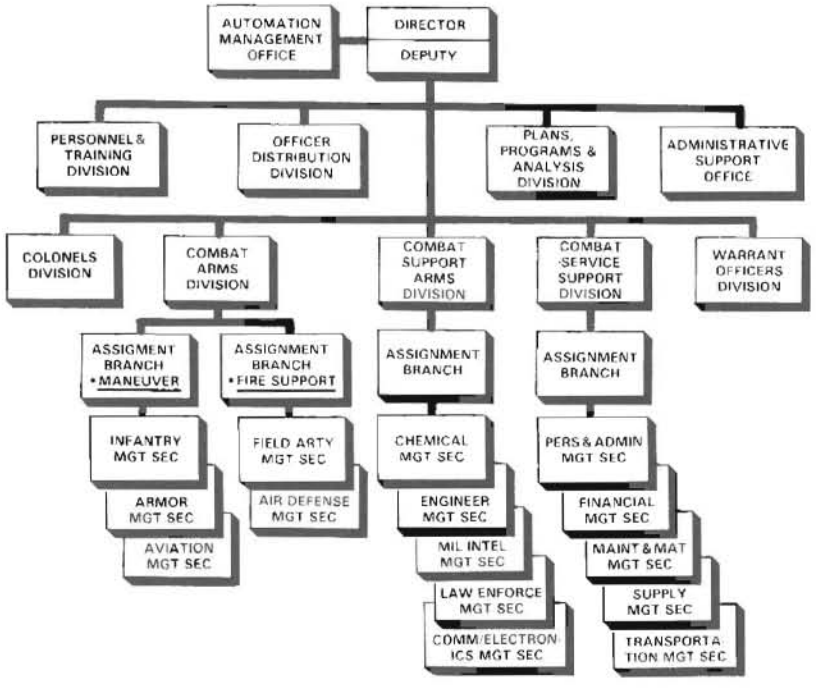


FIGURE 1

continued

ficers are managed by the appropriate division and management section within that division.

Generally, officers can expect to be managed by the division and management section which corresponds to their *basic* branch. However, in some cases, neither specialty is related to a specific branch. The records of these officers will be reviewed to determine which division and management section is most capable of managing the officer's career. Each of these officers will receive an official letter from OPMD explaining their assignment to a new management section. It will not effect the officer's basic branch designation.

Another objective during Phase II will be the transition to a single manager for the non-accession specialty positions. Presently, assignments to non-accession specialty positions are made independently by six different assignment divisions. When the new organization is fully implemented, one management section will coordinate all assignments of officers to positions coded with one of the non-accession specialities.

Figure 2 shows how the 27 accession and 13 non-accession specialties have been assigned to the new management sections. Sections responsible for non-accession specialties will have at least one officer assigned who holds the appropriate non-accession specialty. A major change resulting from the implementation of Phase II is that every assignment in a given specialty will be coordinated with the management section that has overall management responsibility for that specialty as shown in Figure 2.

During Phase III of the plan, the existing Majors Division will be incorporated into the new career management divisions. The existing Lieutenant Colonels Division will be incorporated into the new personnel management structure during Phase IV. The dates for Phases III and IV will be announced following successful implementation of Phase II.

The decision to reorganize OPMD was made last August as a result of a routine organizational management study. Phase I was initiated in January and consisted of the reorganization of the three functional divisions. Under the new structure, functional operations are being performed by a Personnel and Training Division, an Officer Distribution Division, a Plans, Programs and Analysis Division, and an Administrative Support Office.

The staff of OPMD is convinced that the reorganization will significantly enhance their ability to serve the officer corps.

SPECIALITY ASSIGNMENT CONTROLLER RESPONSIBILITY

COMBAT ARMS DIVISION

INFANTRY MGT SEC:
- 11-Infantry
- *54-OPNS Force Dev

ARMOR MGT SEC:
- 12-Armor
- *28-Training Developments

AVIATION MGT SEC:
- 15-Aviation

FIELD ARTILLERY MGT SEC:
- 13-Field Artillery
- *48-Foreign Area Officer

AIR DEFENSE MGT SEC:
- 14-Air Defense
- *46-Public Affairs

COMBAT SUPPORT ARMS DIVISION

CHEMICAL MGT SEC:
- 74-Chemical
- *52-Atomic Energy

ENGINEER MGT SEC:
- 21-Engineer
- *49-ORSA

MIL INTEL MGT SEC:
- 35-TAC/STRAT Intel
- 36-Counter Intel/ Humit
- 37-Elec Warfare

LAW ENFORCEMENT MGT SEC:
- 31-Law Enforcement

COMM/ELECTRONICS MGT SEC:
- 25-CBT Comm-Elec
- 27-Com/Elec Engr
- *53-ADP
- 72-Comm/Elec Mat Mgt

*DENOTES NONACCESSION SPECIALITIES

COMBAT SERVICE SUPPORT DIVISION

PERS & ADMIN MGT SEC:
- *41-Personnel Management
- 42-Personnel Administration
- 43-Club Management

FINANCIAL MGT SEC:
- 44-Finance
- *45-Comptroller

MAINT & MATERIEL MGT SEC:
- *51-Research & Development
- 73-Missile Mat Mgt
- 75-Munitions Mat Mgt
- 76-Arm Mat Mgt
- 77-TK/GRD Mob Mat Mgt
- *91-Maintenance Mgt
- *97-Procurement

SUPPLY MGT SEC:
- 81-Petro Mgt
- 82-Food Mgt
- 92-Supply Mgt

TRANSPORTATION MGT SEC:
- 71-Aviation Mat Mgt
- 87-Marine/Term Opns
- 88-Highway/Rail Opns
- *95-Transportation Mgt

FIGURE 2

Officer Career Info continued

OERS PROGRESS REPORT

Early reports filed under the new Officer Evaluation Reporting (OER) System (DA Form 67-8) clearly indicate a conscious effort by rating officials to fulfill their evaluation responsibilities. One of the most encouraging improvements noted thus far is the writing of duty descriptions. Most reports contain a detailed summary of the rated officer's most important duties and responsibilities, emphasize specific functions required of the officer, and note conditions peculiar to the assignment.

Considerable improvement is also noted in the rater's narrative evaluation of the rated officer's performance (Part Vc). In most cases, the rater's comments in the performance narrative have focused on specific aspects of the rated officer's performance, including results achieved and the manner and degree of achievement. Should this trend continue, the new system will go a long way toward providing the type of narrative that DA selection Boards have been requesting.

A few reports have been returned for correction or improvement of the performance narratives. These reports fall into two categories: those which include comments on potential; and those whose narratives simply do not address the specifics of performance.

COMMAND TOURS EXTENDED

Recent revisions in the Centralized Command Selection System (CCSS) have resulted in the extension of Command Tour lengths for lieutenant colonels and colonels in both CONUS and overseas *long tour* areas to 30 months. The extensions are retroactive to 1 October 1979. Major Army Command commanders have authority to extend or curtail the command tours for up to six months for cogent reasons, such as timing of training, inspection or tests, follow-on assignments, and similar reasons with advance notice to MILPERCEN. The command tour length in overseas *short tour* areas both unaccompanied and accompanied, remains unchanged. These changes to the CCSS are designed to build unit cohesion, improve readiness, and provide more stability for soldiers in field commands.

PROMOTION BOARD GUIDANCE

An objective of the Officer Personnel Management System (OPMS) is that all officers be afforded the opportunity for dual specialty development as they progress through the field grade ranks. Attainment of this goal is sometimes precluded by the necessity for an officer to serve repetitive assignments in one specialty because Army requirements for that speciality exceed available personnel assets. When this condition exists, a specialty is classified as *underaligned*.

The basic goal of Officer Personnel Managers is to insure that adequate numbers of officers by grade and specialty are available to satisfy Army requirements. In recognition of this need, the 1980 Lieutenant Colonel (AUS) Promotion Selection Board which convened in March was provided Specialty Guidance which differed somewhat from guidance given in previous years.

At the beginning of its deliberations, the board was given the number of promotions needed, by speciality, to achieve an acceptable alignment condition. The purpose was to provide board members with an appreciation of the relative magnitude of underalignment by specialty. The data was *not* intended to be a selection quota. Board members were reminded that all eligible officers would be considered equally, regardless of OPMS specialty.

Specialty guidance is indicative of the increased emphasis on insuring that promotion boards are sensitive to Army requirements. Such guidance is intended to foster a positive environment which enhances individual professional development and ultimately contributes to increased unit readiness.

PROFESSIONAL REGISTRATION

The Chief of Engineers has continually expressed his desire for all engineer officers to become professionally registered. He forwarded a letter on the subject of professional registration to all specialty code 21 colonels and lieutenant colonels last September. In the letter, he established an objective that all District Engineers be registered by the summer of 1981. His objective also includes registration or "training" for all Deputy District Engineers by summer 1981. Approximately 50 percent of all specialty 21 colonels and promotable lieutenant colonels are currently registered professionally. Approximately 65 percent of all District Engineers are registered as Professional Engineers, while about 45 percent of all Facility Engineers (06s) are registered as PEs.

SSC/CSC SELECTION BOARDS

Separate DA Senior Service College (SSC) and Command and Staff College (CSC) screening boards will convene on or about 8 July to consider officers (other than JAG, CH, and AMEDD) for nomination to the respective 1980 SSC and CSC selection boards, which are scheduled to convene on or about 26 August.

Enlisted Career Info

TUITION ASSISTANCE

The Army will pay up to 75 percent of the tuition cost for formal education courses leading to an associate's, bachelor's, or master's degree, under provisions of the Tuition Assistance Program. Tuition assistance cannot, however, be used for courses beyond the master's degree level or for courses leading to a second associate's degree. In order to receive tuition assistance, enlisted personnel must have enough time in service remaining on their current enlistment to complete the course for which assistance is provided. Personnel who apply for and accept tuition assistance and then drop out for personal reasons, must reimburse the Army for the amount of the assistance. Personnel who drop out because of military reasons or because of illness, do *not* have to reimburse the Army. Check AR 621-5 or contact your local education center for additional requirements and/or information.

OMPF REVIEWS

Soldiers may now review their Official Military Personnel Files (OMPF) at their home stations instead of traveling to Fort Benjamin Harrison, IN. To obtain a copy of your OMPF, simply write to the Commander, USAEREC, ATTN: PCRE-RF-1, Fort Benjamin Harrison, IN 46249. Include your name, social security number and signature, and the address to which the record is to be mailed. Requestors should receive their OMPF copy within 15 days.

Soldiers who wish to review their records at Fort Harrison must make an appointment at least five working days in advance by calling AUTOVON 699-2657 or commercial 317/542-2657.

Individuals may update their OMPF by personally delivering authorized file material or by mailing it to Commander, USAEREC, ATTN: PCRE-FR-S, Fort Harrison, IN 46249. Only documents authorized by AR 640-10 will be put on the OMPF microfiche record. Documents received by mail that are not authorized will be destroyed. Soldiers should, therefore, check with their local Military Personnel Office to verify what material is authorized for filing in the OMPF.

NEW EER REG

AR 623-205 is the new consolidated regulation that governs the preparation and submission of enlisted evaluation reports (EER). It became effective in January and replaces Chapter 8 of AR 600-200 and DA Pamphlet 623-1. It 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 provides a single, easy-to-read reference source for both individual soldiers and the managers of the EER system.

REENLISTMENT CHANGE

Soldiers who fail their Skill Qualification Test (SQT) may still be eligible to reenlist under a change to the Army Reenlistment Program. The interim change to AR 601-280, effective 15 January 1980, allows a soldier's commander to certify that the individual is "qualified for continued Army Service" and eliminates a previously required waiver.

SQT UPDATE

Skill Qualification Tests (SQT) for all MOS will be revised in coming months. Major changes will include more emphasis on hands-on training and performance testing, single skill-level testing, and more timely feedback.

The Written Component will be renamed the "Skill Component" (SC) and will be much shorter than in the past. For combat arms E-1s through E-4s, it will be limited to one hour. For all others, it will be limited to two hours. The Hands-On component (HOC) of the test remains basically the same. However, commanders will be able to split the HOC into "bite-size" segments so it can be given more easily. An Alternate Hands-On Component in the form of a written test will be available for soldiers who cannot take the Hands-On Component because their unit does not have the necessary equipment for their MOS.

A new Job-Site Component (JSC), administered by first-line supervisors, will be added to the SQT, replacing the Performance Certification Component. The first-line supervisor will prepare the soldier and administer the on-the-job evaluation.

For combat arms soldiers, the largest part of the new SQT will be hands-on and job site testing. Combat support soldiers will have comparable hands-on, job site, and skill component testing. Combat service support soldiers will have an SQT made up of one-half skill component and one-half hands-on and job site testing.

Single skill-level testing has also been approved. In the past, about 25 percent of the SQT consisted of tasks from the next higher skill level. Now soldiers will be tested only at their current skill level.

The area of common tasks is also under study. Within the SQT, a number of tasks are common to every soldier. These tasks need to be standardized throughout the Army. A more efficient system is being developed to do this.

Reserve Components

NEW DISCHARGE POLICY

Soldiers getting out of the Army before completing their first enlistment could be transferred to the Individual Ready Reserve (IRR) instead of receiving a discharge, according to new Department of the Army policy.

The new policy applies to Regular Army, Reserve, and National Guard soldiers separated for such reasons as dependency, hardship, and inability to perform duties due to parenthood. Soldiers separating after completing basic training or at least eight weeks of unit training at one station may be transferred to the IRR to complete their six-year obligation.

EOAC DATES

Four phases of the USAR Engineer Officer Advanced Course will be conducted this summer at the US Army Engineer Center and Fort Belvoir, VA. Phases IA and IV will be conducted June 15-28 by the 3288 USAR School of Greenville, SC. Phases II and VI will be conducted July 6-19 by the 1036 USAR School of Farrell, PA.

Prerequisites for attending either session include:

- Membership in the US Army Reserve or Army National Guard
- Grade of first lieutenant or above
- Previous successful completion of the Engineer Officer Basic Course

Applicants who have previously completed EOAC will not be considered for attendance at either session of instruction. Applicants for Phase IA must have a Confidential Security Clearance, while applicants for Phase IV must have at least an Interim Secret Security Clearance.

Applications for Active Duty for Training should be processed through normal command channels. Detailed information regarding enrollment and/or instruction should be addressed to: Commandant, US Army Engineer Center, ATTN: ATZA-DTR, Fort Belvoir, VA 22060. Telephone commercial 703-664-4095 or AUTOVON 354-4095.

CAPSTONE PROGRAM

The Army Capstone Program has evolved from two separate but related programs: the Support Unit Improvement Program (SUIP), and the Wartime Mission/Utilization Program (WARM-UP). It is designed to link Reserve Component units with the Active Component units they will be expected to function with during wartime.

Capstone provides for direct interaction among geographically proximate AC and RC units for the purpose of improved training and overall readiness. The training association is technical in nature and will not circumvent or violate established command channels on matters of policy, command, control, plans, or funding.

The planning association of AC units with RC units provides the necessary interaction to conduct mission planning based on a wartime assignment to a specific gaining wartime command. Exchange of standing operating procedures (SOPs) and direct command and staff communications are encouraged.

The following group, or "package," of AC and RC units is typical under the Capstone concept:

420th Engineer Brigade, USAR, Bryan, TX

353rd Engineer Group, USAR, Oklahoma City, OK

299th Engineer Battalion, Fort Sill, OK

120th Engineer Battalion, ARNG, Oklahoma

875th Engineer Battalion, ARNG, Arkansas

The Capstone Program will ultimately define a basis for mobilization, stationing, and development of a peacetime Reserve Component force tailored for wartime employment.

INADEQUATE DRILL ATTENDANCE

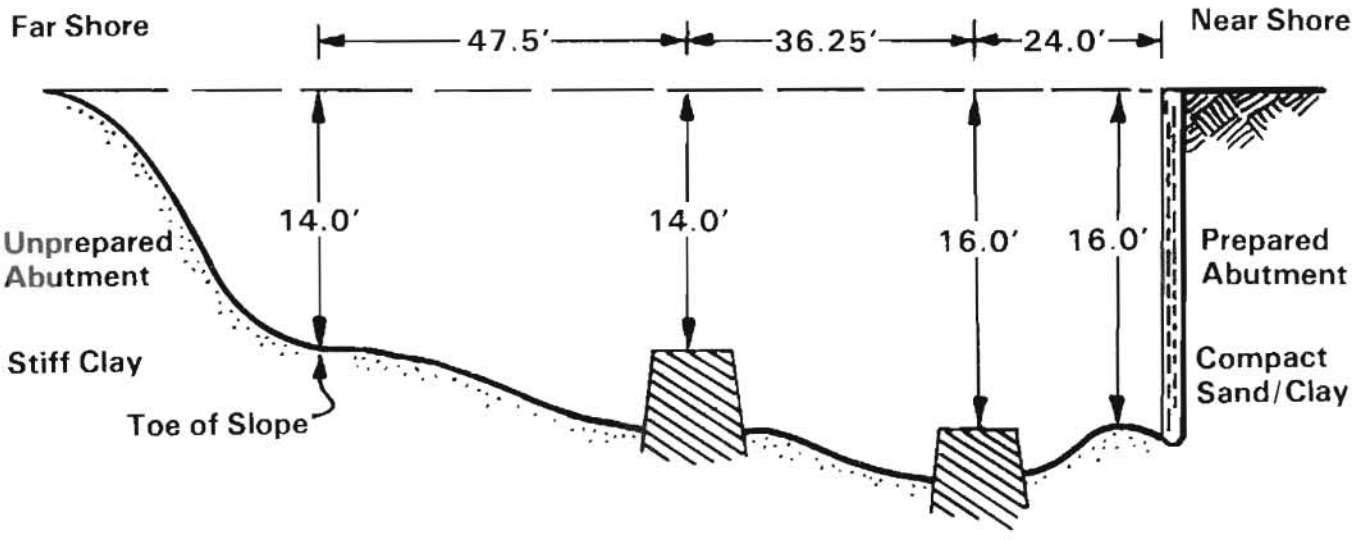
The Appropriations Committees of both the House and the Senate have expressed strong sentiment for punitive action against Reserve units which fail to achieve at least 70 percent attendance at IDT. The punitive action will likely be a denial of pay. The exact language implementing the action is not available at this time, but commanders should strive to achieve the highest possible attendance at monthly training sessions (RSUTA/RST) in the meantime.

ROTC SCHOLARSHIPS

The Army has awarded four-year ROTC scholarships to 867 more high school graduates for academic year 1980-81. These scholarships are in addition to those offered last October. Overall, the Army expects more than 1,000 scholarship recipients to enroll in Army ROTC this fall. The application period for academic year 1981-82 has been in effect since April 1 and continues until November 15. Applications may be obtained by writing to: Army ROTC, P.O. Box 7000, Larchmont, N.Y. 10538.

Our apologies to current and former members of the 18th Egineer Brigade, USAREUR, for depicting the Brigade's shoulder sleeve insignia upside down in the Spring issue. We regret the error and appreciate the concern and interest of the many readers worldwide who let us know of the mistake.

Engineer Problem



As a result of recent inclement weather, a local community in the Hanau area has been denied the use of an important road link. The major problem was created by a flash flood which destroyed all but the pier foundations of the only Class 60 bridge spanning a small river on the outskirts of the community.

The local crisis did not pass unnoticed by U.S. Army engineer personnel stationed within the Hanau area, who have maintained an excellent relationship with the local German populace. At a recent cocktail party, the Brigade commander requested assistance from the commander of the 559th Engineer Battalion. The 559th commander, in turn, tasks you, as the commander of the 516th Engineer Company, to provide a solution to the crisis. He gives you the following information:

- An initial reconnaissance of the destroyed bridge site revealed the gap profile shown above.
- A Class 60 facility is required.
- An unlimited amount of Bailey Bridge is available from stock.
- If a multi-span bridge is designed, the piers must be of Bailey Bridge components.
- Conversion sets #3 are available, but there is no cable reinforcement.

Your greatest concern is that your company has been equipped with the Medium Girder Bridge for five years, and there is very little expertise on Bailey Bridging within your unit. Nevertheless, your mission is to design a Bailey Bridge that will carry Class 60 wheeled traffic, and to provide at least one alternative design.

You inform your platoon leaders that approximately one platoon (+) is available for site preparation and construction. Since you feel this is an opportunity for them to gain experience, you insist that they satisfactorily justify their selected design. Your only other instructions to them are that they have seven days to complete the task.

See THE SCHOOL SOLUTION, page 40

The School Solution

CONSIDERATIONS	SOLUTION #1	SOLUTION #2
DESIGN	Simple Span	Multi-span continuous with Standard Bailey Pier erected on far shore existing pier
SPAN LENGTH	Gap + roller clearance + Safety Setbacks 107.75' + 2(2.5') + 3.5' + (14× 1.5') =137.25'	Span A=36.25' + 24' + 2.5' + 3.5' = 66.25' Span B = 47.5' + 2.5' + (14 × 1.5') = 71'
TYPE CONSTRUCTION		
Design length	Rounded to 140 feet	Span A rounded to 70 feet, Span B rounded to 80 feet
Capacity	Class 70/70	Class 80/80
Truss type	Double triple	Triple Single
GRILLAGE		
Near Shore	3 Tons per square foot = Type 4,5,7,8 = roller clearance =3.5'	3 Tons per square foot = Type 3* = 3.5' roller clearance
Far Shore	1.5 Tons per square foot = Type 7,8 = roller clearance = 3.5'	1.5 tons per square foot = Type 6,7,8 = 3.5' clearance (Select Type 6)
PIER REACTIONS	N/A	70' – 80' = (172* + 167)/2 = 169.5 tons (* Select worst case)
PIER SELECTION	N/A	Reaction required = 169.5 tons Lift required = 14' (Select pier as at Figure 17-33, FM 5-277, with all trusses loaded and crib up 7'')
ADVANTAGES	No pier required	Single story construction Requires less numbers to construct
DISADVANTAGES	Triple storey construction involving difficult technique Required work force exceeds available work force	Requires construction of pier

The major concern must be that of expertise and total manpower available. Therefore, a triple-single design would be much less of a problem than a double-triple. With a construction deadline of seven days, there is ample time to establish a unit training familiarization program to adequately deal with the practical aspects of the task, including pier construction. Although the numbers available are less than desired for either alternative, they will weigh heavily in favor of single-story construction.

There are, of course, other alternatives, including a broken span, and reinforcement by adding a partial story or supplementary chord to a double story bridge. Both of these alternatives are rejected primarily because of technique and time considerations.

To complete the recommended alternatives, and insure that sufficient components are demanded, we must consider the launch design and total numbers of rollers, bearings, templates, etc., required.

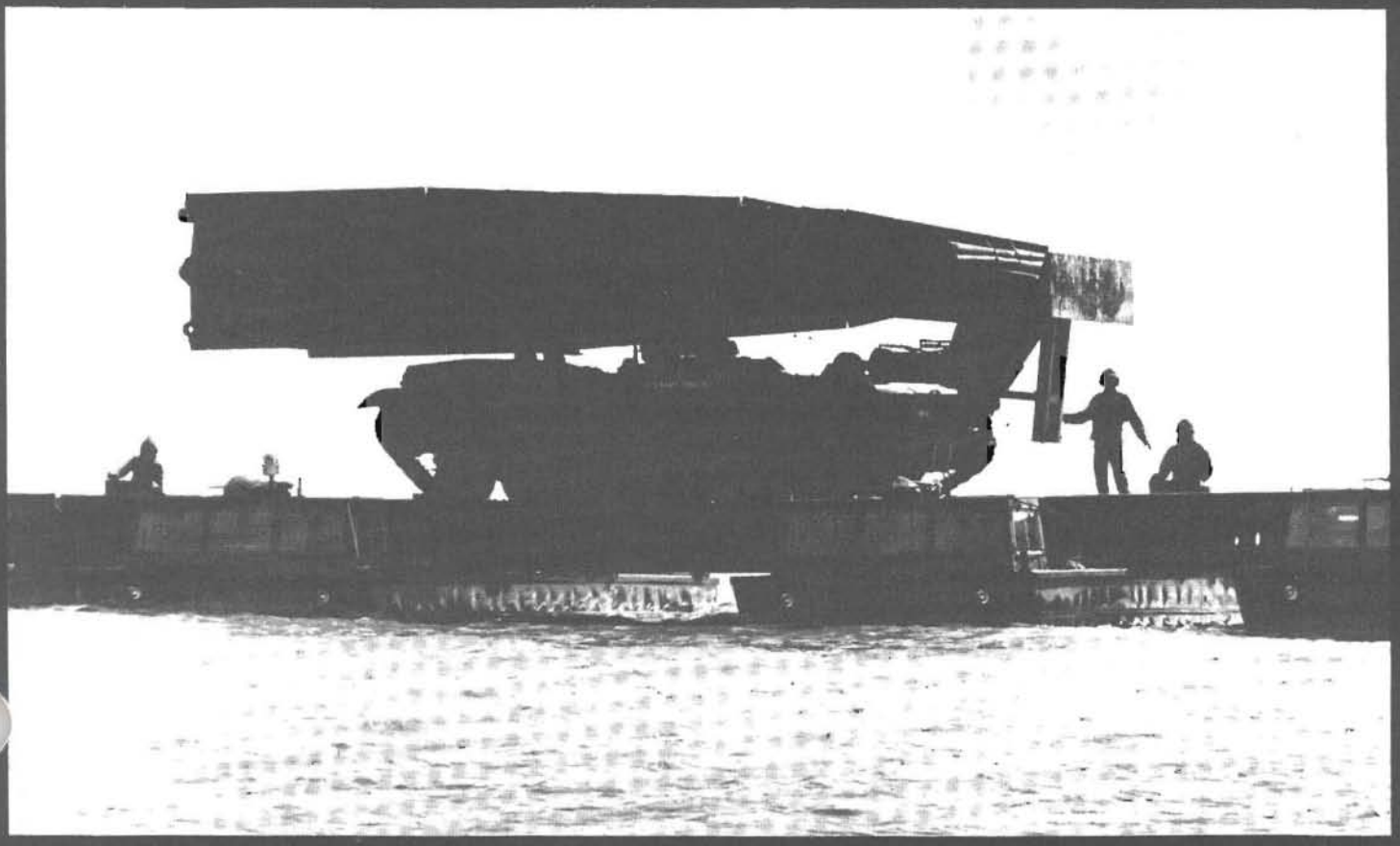


PHOTO OF THE QUARTER

PFC N.P. Lang shot this photograph of an Assault Vehicle Launched Bridge (AVLB) being transported by a Mobile Assault Bridge (MAB) during a recent bridging demonstration by the 902d Engineer Company (FB) at Fort Belvoir, VA. Engineer soldiers and equipment are silhouetted against a thick cloud of defensive smoke. ENGINEER Magazine will publish the most outstanding engineer training photo submitted each quarter, so the next time your unit conducts training, ask someone to take a few black and white shots and send us your best one. Your help is needed to make Photo of the Quarter *a regular feature of ENGINEER.*

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"In the final analysis, the Army's state of readiness depends upon its most important element, the people who are the Army."

—Clifford A. Alexander
Secretary of the Army