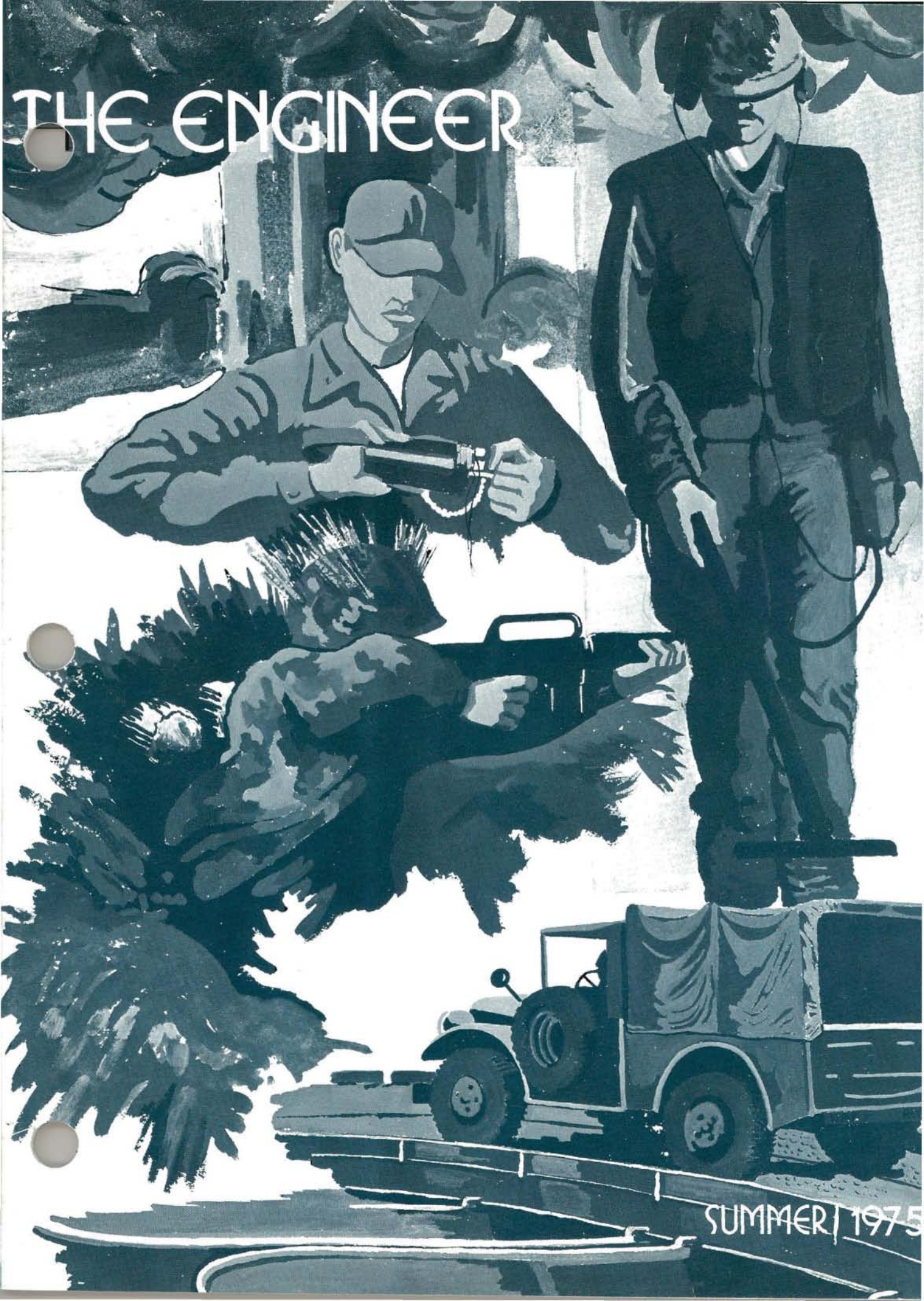
THE ENGINEER



SUMMER | 1975

THE ENGINEER

VOLUME 5 NUMBER 2 SUMMER 1975

FEATURES

DEPARTMENTS

CHIEF'S BRIEFS

Stephen H. Long, last Chief of the Corps of Topographical Engineers, was born December 30, 1784 in Hopkinton, New Hampshire.

Appointed a second lieutenant in the Corps of Engineers in 1814, Long taught mathematics at West Point for two years. In 1816 he was transferred to the topographical engineers with the brevet rank of Major and remained with this branch for the rest of his career.

In 1817 Long conducted extensive explorations in the Northwest. Commanding the expedition to the Rocky Mountains in 1819-1920, he discovered the peak which bears his name. Colonel Long was then assigned to explore the northern boundry of the United States, which he fixed at the 49th parallel at Pembina (now in N. Dakota), in 1823.

In 1827 he helped select the route of the Baltimore and Ohio Railroad and became its Chief of Surveys and a member of its Board of Engineers. The expertise developed by this experience enabled Long to author the first 'Railroad Manual' in 1829.

Colonel Long in 1836 obtained patents on his method of bracing and counterbracing wooden bridges, an area in which he became interested through his railroad work. Many early railroad bridges were constructed according to his specifications.

Long for years was chief engineer for the improvement of western rivers, with headquarters at Louisville and later at St. Louis in 1858.

On September 9, 1861 Colonel Long became Chief of the Corps of Topographical Engineers. Upon merger of the two corps on March 3, 1863, he became the senior officer to the Chief Engineer, Corps of Engineers. He retired the same year.

Stephen H. Long died at Alton, Illinois on September 4, 1864.

John M. Dervan
Asst. Curator, US Army Engineer Museum

United States Army Engineer School Fort Belvoir, Virginia

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ABOUT THE COVER

Captain John V. Kauffman's painting depicts the twin roles performed by Engineer Corps personnel: they undertake all the activities commonly associated with soldiering, and as combat engineers, both during war and peace, they engage in a whole range of engineering activities requiring skills, precision and selflessness.

RECREATION OPPORTUNITIES DETAILED IN CORPS PHAMPHLETS

Outdoor enthusiasts can now avail themselves of free Directories of Recreation Opportunities at US Army Corps of Engineers Projects.

Six directories covering the continental USA are available: New England, Northeast, Midwest, West, Southwest and Southeast.

Each contains a detailed map and lists the various outdoor facilities.

For your copy write to:
Public Affairs Office
Office of Chief Engineers
Washington D. C. 20314

NONRESIDENT COURSE DETAILED

Engineer Officers who have graduated from their branch advanced courses are encouraged to apply for enrollment in the Command and General Staff College non-resident program.

The course closely parallels the resident program and is designed to prepare officers for duty as commanders and general staff officers.

A course description is available in DA Pamphlet 350-10. This can be obtained by writing, The Commandant, Command and General Staff College, ATTN: DNRI, Ft. Leavenworth, Kansas 66027.

ENGINEER OFFICERS AND WARRANT OFFICERS DIRECTORY AVAILABLE

The Directory of Corps of Engineers Officers and Warrant Officers (1975 Edition) is available for purchase at the USAES. Mail order requests should be sent to: USAES Periodical Publications Fund, Office of the Secretary, USAES, Fort Belvoir, VA 22060. Cost is $2.25 per copy (covers handling and mailing costs). Make checks payable to: USAES Periodical Publications Fund.

FAR EAST DISTRICT, CORPS OF ENGINEERS SEEKS ASSISTANCE

Information is being compiled for a history of the Far East District, Corps of Engineers, 1957 to 1975. If anyone has general information, anecdotes, photographs, newspaper clippings, brochures, maps, or the like concerning the District, please contact Earle Whitmore, Historian, Far East District, Corps of Engineers, APO San Francisco 96301. Any temporary loans, such as news clippings, photographs, or maps, would be duplicated and returned immediately.

THE DMA APPROVED DEFINITION OF MC & G

"Mapping, charting, and geodesy (MC&G) comprises the collection, transformation, generation, dissemination, and storing of geodetic, geomagnetic, gravimetric, aeronautical, topographic, hydrographic, cultural, and toponymic data. These data may be used for military planning, training, and operations including aeronautical, nautical, and land navigation, as well as for weapon orientation and target positioning. The data may be presented in the form of topographic, planimetric, relief, or thematic maps and graphics; nautical and aeronautical charts and publications; and in simulated, photographic, digital, or computerized formats."

"MC&G does not include the evaluation of topographic, hydrographic, or aeronautical features for their effect on military operations or intelligence."

STATUS OF FAMECE

The Validation Phase In Processing Review (IPR) for the Family of Military Engineer Construction Equipment (FAMECE) was held at the USAES 31 Oct - 1 Nov '74. The IPR concluded that the results of the competitive prototyping effort, to include Developmental Testing/Operational Testing demonstrated the Military worth of FAMECE and

LINE. PIPELINE.

recommended that the program enter Full Scale Development (FSD). The recommendation was approved by Deputy Chief of Staff for Research, Development and Acquisition when it approved the IPR minutes on 16 Dec. '74. Subsequent to this action an announcement was made by the Source Selection Authority of the contractor selected for FSD and a contract was awarded to the Clark Equipment Company on 24 Dec. '74.

Clark Equipment Company will build two additional prototypes (dumper and loader modules) for delivery in early 1976. The entire family (17 complete vehicles — 2 of each vehicle plus an extra dumper vehicle) is scheduled for delivery in the fall of 1977 for testing in 1977 and 1978. The family is scheduled for fielding in 1980.

CHANGE TO EOAC

The recent change in lengths of the Engineer Officer Advanced Course (EOAC) will be implemented at the USAES with class reporting in September 1975. The EOAC will be 26 weeks in length, a reduction from 32 weeks. The changes to accomplish this reduction are elimination of all electives and reduction of some technical aspects of engineering and some corresponding increases of military engineering. The course purpose remains the same: "To prepare engineer officers to be technically, tactically and administratively competent Company Commanders and Battalion Staff Officers (including a refresher at Platoon Level). Emphasis is placed on the management of training at the squad, platoon and company level." The 26 week course is presently being systems engineered and in-resident EOAC students are assisting in this effort to provide the field input as to what tasks should be included in resident training. The overall objective is to qualify the graduate as a military engineer to meet primary specialty under OPMS.

CRELL Test New Concrete Application

Savings in highway construction costs throughout the country are being sought through a long term study being conducted at the U. S. Army Cold Regions Research and Engineering Laboratory (CRREL).

A test road section was constructed in 1971 to compare standard construction techniques utilizing a granular base course between the road subgrade and the asphaltic concrete surface, with one in which a thick asphaltic concrete (ABC) pavement is applied directly to the subgrade. This latter method eliminates the cost of the granular base course, usually gravel and sand.

The road section, located adjacent to the CRREL facility, leads to the Hanover town gravel pits and is subject to heavy truck traffic, particularly during the frost melting period. This is the most critical time to the year for proper performance of roadways.

In the study, which is expected to run for ten years, measurements are made of pavement strength, degree of frost heave, and depth of frost penetration in the roadway. In addition to normal traffic, the pavements are subjected to repeated loads simulating added traffic to study the structural response of the roadway. The testing is conducted when the pavement section is frozen, thawing, and completely thawed.

Results to date indicate that there is a greater than normal degree of frost heaving in the section without the base course. However, the heaving tends to be at a uniform rate, leaving a relatively smooth pavement surface. The roadway returns to near normal after the spring thaw.

The uniformity of the subgrade is the key factor for the development of uniform heaving. In construction the subgrade was prepared by scraping, blending, and recompacting 18 inches of the native silty subgrade soil.

In the spring, the subgrade beneath the ABC section was found to have a high water content. The water cannot easily drain through the fine grained silt and results in a reduction in the pavement's load carrying ability.

Seeking to solve this drainage problem, a related study is being conducted in which a tough, porous fabric, overlain with a layer of porous asphalt, is placed below the asphaltic concrete wearing surface to provide proper drainage. Preliminary results from this study are supporting the feasibility of this concept.

ENGINEER

Engineer Personnel Managers in OPD — Reorganization of OPD has taken place. Listed below are the players, their organization and their telephone numbers. The "P" is still in Personnel and Profession.

Colonels Division: (DAPC-OPC-AE)
Engineer Assignments, LTC Thomas Sands, 325-7871

LTC Division: (DAPC-OPL-AS)
Engineer Assignments, LTC Henry Covington, 325-0423

Majors Division: (DAPC-OPM-AS)
Engineer Assignments, MAJ Ted G. Stroup, 325-8107

Combat Support Army Division: (DAPC-OPF-EN)

Division Chief	COL Carl P. Rodolph	325-0628
Engineer Branch Chief	LTC Charles E. Eastburn	325-7434
CPT Assignments	MAJ James E. Corbin	325-0650
LT Assignments	CPT Milton Hunter	325-0651
Professional Development	MAJ Martin Suydam	325-7426

Warrant Officer Division: (DAPC-OPW-WU)

Engineer Assignments	CW4 Jean L. Derby	325-7837

(For Autovon dial 221 and the last four digits)
The mailing address remains the same: 200 Stovall Street, Alexandria, Virginia 22332

OPMS — Alternate specialty designations have now been made for all Engineer officers wi[illegible] greater than seven years of active commission service. The spectrum of specialties that [illegible] compatible with being an Engineer are extremely broad. Table 1 shows the percentage of Engineer officers by grade designated into various alternate specialties. The table is reflective of the diversity of the Army's requirement in alternate specialist for engineer officers beyond the eighth year of service. As you would expect, the heaviest concentrations are in specialties oriented on the applied physical sciences and analytical techniques. However, there are large requirements in other areas for officers with engineer skills and aptitudes. Since alternate specialty designations are based on the size of the specialty requirements at higher grades, you can see that there are indeed multiple path routes to success.

ALTERNATE SPECIALTY DESIGNATIONS
PERCENT BY GRADE

ALTERNATE SPECIALTY		LTC %	MAJ %	CPT 7 YRS %
Infantry	11			
Armor	12			
Field Artillery	13			
Air Def Artillery	14			
Cmbt Comm-Elec	25			
Fixed Telecomm Syst	26			
Comm-Elec Engr'g	27			
Audio-Vis Instr Tech	28		1	
Law Enforcement	31		1	1
Tact/Strat Intell	35	2	2	5
Counterintell/HUMINT	36		1	1
Cryptology	37		1	
Personnel Mgmt	41	8	6	[illegible]
Personnel Admin	42	1	1	1
Club Mgmt	43			
Finance	44			

Comptroller	45	3	3	3
Information	46	1	1	1
Education	47	9	10	7
Foreign Area	48	11	9	9
OR/SA	49	4	8	9
R&D	51	22	23	20
Atomic Energy	52	8	5	6
ADP	53	2	3	3
Ops & Force Dev	54	13	10	11
Avn Mat Mgmt	71	1	1	1
Comm-Elec Mat Mgmt	72			
Missile Mat Mgmt	73			
Chemical	74			
Munitions Mat Mgmt	75	1		
Armament Mat Mgmt	76			
Tank/Ground Mob Mat Mgt	77	1	1	1
POL Mgmt	81		1	1
Food Mgmt	82			
Gen Trp Spt Mat Mgmt	83		1	1
Traffic Mgmt	86	1		
Mar & Term Opns	87	1	1	1
Hwy & Rail Opns	88		1	1
Maint Mgmt	91	3	5	5
Supply Mgmt	92	6	5	4
Log Svcs Mgmt	93	1	1	1
Transportation Mgmt	95		1	
Procurement	97	5	5	4
Logistics	98			

TABLE 1.

Stability . . . Expect 36 months on station except for short tour areas. If you have questions concerning the date when you will be next available for reassignment, contact your assignment officer. The name of the game is stay put and do a professional job.

GRADUATE SCHOOL NOTES:

Graduate School Opportunities in FY 76. We anticipate the following graduate school input during FY 76 in support of Army requirements:

FUNDED GRADUATE TRAINING

AERB	31
USMA Instructor Training	20
USMA/Rotc Top 5%	20

PARTIALLY FUNDED TRAINING

Degree Completion Program Bootstrap	16
Advance Degree Program for ROTC Instructor Duty	19
Cooperative Degree Program	5

TOTAL — 111

Fully Funded Advanced Degree Training (AR 621-1, Chapter 4). This is the principal program for obtaining a graduate degree and provides the primary means to train officers at the masters level. Application is made by forwarding DA Form 1618-R. An officer's application is automatically considered each time he becomes available for reassignment. The primary zone for consideration for schooling is 5 to 14 years service. An outstanding overall record of performance is necessary to be a contender for selection. For planning, the FY 76 input will be in these disciplines: 22 Civil Engineers, 1 Geodetic Science, 1 Topography/Photogrammetry, 1 Foreign Area Studies, 1

Procurement/Logistics Management, 1 ADPS Engineering, 1 Nuclear Physics, 1 ADPS Business, 2 ORSA Engineering.

School Input	CALENDAR Application Due	Selections Announced
Jan 76	1 Jul 75	15 Aug 75
Jun 76	1 Nov 75	15 Jan 76
Sep 76	1 Feb 76	15 Mar 76

Advanced Degree Program for ROTC Instructor Duty (AR 621-101). ROTC inputs preceded by graduate training are being programmed ahead as far as the summer of 1978. Quotas will permit 19 Engineers to enter graduate school in FY 76 with a follow-on ROTC assignment.

Degree Completion Program (Bootstrap) for Graduate Degree (AR 621-1, CH 8). Thinking about beginning a masters degree off-duty with a goal of obtaining a "bootstrap" to finish degree requirements? Good plan, but be sure that the academic discipline is one which we can support. All new participants after July 1975 must study in an academic discipline for which an AERB position exists and serve in a follow-on utilization assignment.

GRADUATE CIVIL SCHOOL ACADEMIC DISCIPLINES. Regardless of program, Army sponsored graduate training is restricted to those disciplines in which the Army Educational Requirements Board has validated requirements and a "shortage" of qualified officers exists. Currently, for Engineer officers these disciplines are as listed below:

BUSINESS:

- BAL ORSA Analysist
- BAM Comptrollership
- BAN ADPS Business
- BBF Logistics Management
- BBP Procurement

ENGINEERING:

- CCX Civil Engineering
- CFX Aeronautical Engineering
- CLX Nuclear Effects Engineering
- CEX Chemical Engineering
- CSX Engineering Physics
- CUC ORSA Engineering
- CUA ADPS Engineering

PHYSICAL SCIENCE:

- DEX Geodetic Science
- DED Topography & Photogrammetry
- DLX Physics
- DLD Nuclear Physics

SOCIAL SCIENCE:

- EBX Foreign Area Studies

POTPOURRI

UNDERGRADUATE SCHOOL NOTES:

Degree Completion Program (Bootstrap) (AR 621-1, Ch 8). The current estimate is that 40 Engineers will intiate undergraduate training under this program during FY 76. The maximum period of training that can be supported is 18 months. Our objective is to support those officers with outstanding performance records in obtaining a bachelors degree in disciplines that the Army can use. These disciplines are too numerous to list, but undergraduate education directed in the areas where graduate level shortages exist get preferential consideration. See the disciplines previously listed.

School Input	CALENDAR Application Due	Selections Announced
Jan 76	Jul 75	Aug 75
Jun 76	Dec 75	Jan 76
Sep 76	Mar 76	Apr 76

ADVANCED COURSE CLASSES SCHEDULED

Engineer Officer Advanced Course (EOAC) classes beginning after 1 July 1975 will be reduced in course length from 32 weeks to 26 weeks. Three Advanced Course classes are scheduled for FY 76.

EOAC	1 - 76	28 Sept 75	20 Apr 76
	2 - 76	8 Feb 76	12 Aug 76
	3 - 76	6 Jun 76	14 Dec 76

The FY 76 schedule for the 12 week long Engineer Officer Basic Course (EOBC) classes is as follows:

EOBC	1 - 76	10 Jul 75	3 Oct 75
	2 - 76	26 Aug 75	21 Nov 75
	3 - 76	20 Oct 75	30 Jan 76
	4 - 76	8 Jan 76	2 Apr 76
	5 - 76	5 Feb 76	30 Apr 76
	6 - 76	8 Apr 76	2 Jul 76
	7 - 76	12 May 76	6 Aug 76

Engineer Noncommissioned Officer Advanced (ENCOA) and Basic (ENCOB) courses are programed in accordance with career management fields.

4 ENCOA course and 20 ENCOB courses are scheduled for FY 76. Details and dates of courses are available in USAES Pam 350-1, or contact

Chief, Resident Training Management Division
United States Army Engineer School
ATTN: Operations Branch
Fort Belvoir, Va 22060

OPD Reorganization

Colonel Carl P. Rodolph, Jr.

On 19 May 1975, the Officer Personnel Directorate, U.S. Army Military Personnel Center, Department of the Army, was reorganized and the traditional "branch concept" of personnel management, as we once knew it, was eliminated. This is the most evolutionary change in officer career management since the inauguration of the Officer Personnel Act of 1947. Essentially, the reorganization permits the "streamlining" of OPD for optimum professional development and utilization under the Officer Personnel Management System (OPMS) as promulgated by the Chief of Staff, Army in March 1973. Although the OPD internal reorganization has been completed, assignments will not fully be made by primary and secondary specialties until January 1976. As a matter of review, OPMS has three primary objectives for officer professional development:

- To develop officers in the proper numbers and skills to meet Army requirements and maximize the individual officer's abilities, aptitudes and interests.
- To assign officers based upon Army requirements and within capabilities in consonance with individual competence and desires.
- To improve the overall motivation and professional satisfaction of the Officer Corps.

Before launching into reorganizational changes, it is important to review the previous configuration of OPD. Figure 1 delineates the traditional OPD organization consisting of 14 separate branches, a Colonel's Division, and the functional chiefs (Professional Development and Plans, Distribution and Personnel Actions). Historically, branches primarily have been concerned in making assignments to meet Army requirements. Professional development, an equally important mission, was accomplished, by some branches, in a secondary fashion. Further, there was no central "clearing house" to insure that an officer selected for an assignment in a specific grade was in fact the best qualified member of a Special Career Program (SCP). For example, when OPD previously received a requirement for a lieutenant colonel qualified in Operations Research and Systems Analysis (ORSA), the requirement for fill was given to a branch having an available ORSA qualified officer. There was no internal OPD mechanism to determine if the best qualified and available LTC from among all branches was placed against the requirement. The single OPD exception was in the Colonel's Division, created in 1962, which receives all O-6 requirements and assigns officers worldwide based upon a total review of individual qualifications and experience. The "success story" in the Colonel's Division was in many ways a precursor to the OPD reorganization. The Colonel's Division, retained as previously organized, is depicted in Figure 2. The 14 career branches have been replaced by 6 divisions which manage lieutenant colonels, majors, company grades and warrant officers. Three of the 7 divisions are configured to handle the assignment and professional development of all company grade officers and are grouped as *Combat Arms* (Armor, Artillery, Infantry and Air Defense Artillery), *Combat Support Arms* (Engineer, Military Intelligence, Military Police and Signal) and *Combat Service Support* (Ordnance, Quartermaster and Transportation). The three functional chiefs (Professional Development, Distribution and Resource Management) retained the bulk of their previous responsibilities, exclusive of some internal OPD alignments.

The OPD reorganization is more than cosmetic and the impact upon officer professional development is far reaching. For example, by this fall, all field grade officers will be managed by specialty in the appropriate division commensurate with their grades. Under this personnel management concept, each division, like the Colonel's Division, will receive all requisitions and assign officers based upon primary or alternate specialty qualifications. To assist field grade divisions in the management of personnel, each division will have a number of multiple Specialty Management elements (assignment officers), a Professional Development Branch, Personnel Actions Branch and Personnel Support Branch. Specialty managers will have responsibility for the assignment of all officers in two or more specialties. For example, a lieutenant colonel, with Engineer as his primary specialty, would direct requests for information to the Engineer Specialty Manager of the Lieutenant Colonel's Division. However, if the engineer officer had an

OFFICER PERSONNEL DIRECTORATE

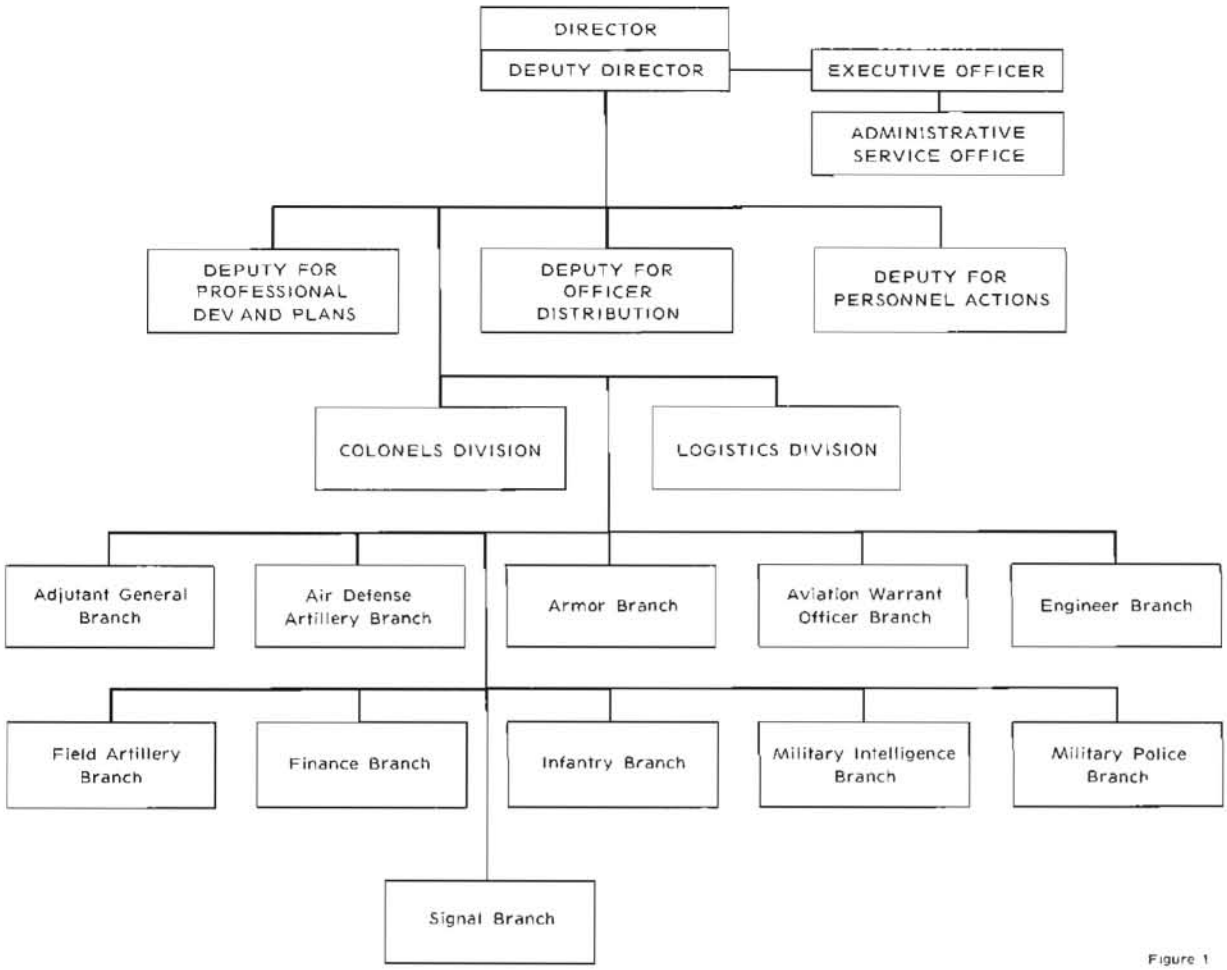


Figure 1

NEW ORGANIZATION

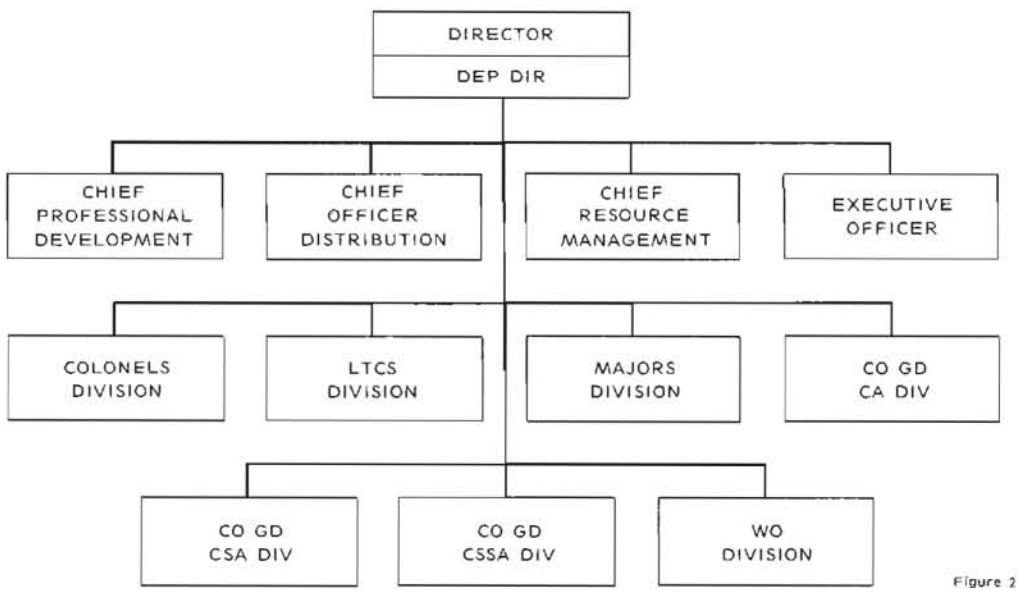


Figure 2

alternate specialty of Operations and Force Development, he would make contact with the lieutenant colonel managing Foreign Area Officer (FAO) and Operations and Force Development specialty assignments. The Lieutenant Colonel's Division organizational structure is illustrated in Figure 3. By now it should be obvious that each Army officer must "check into the net" with two assignment officers, primary and alternate, to receive information and professional development guidance.

As a matter of interest, one of the perennial OPD problems has been the dichotomy between the assignment officer, who is faced with the inescapable fact of getting a qualified individual on station within acceptable time limits, and the professional development officer, who primarily is concerned with the individual development of an officer *today* to meet an Army requirement in the *future*. All too frequently, the professional development must be temporarily deferred to meet an immediate high priority officer requirement. This accommodation is most pronounced during periods of conflict. However, proper balance in assignments/professional development must, and will, be kept in the proper perspective in the new OPD organization.

At the beginning of this article, the demise of the traditional "branch concept" was mentioned. In a practical sense, branch association has been replaced with specialty for field grade officers. However, as a result of organizational identity and pride, DA decided to preserve the current branch concept for company grade officers. Therefore, CA, CSA, and CSS Divisions — each headed by a colonel — will retain the current structure in the assignment branches. For example, the CSA Division will consist of a total of 7 branches: Engineer, Military Intelligence, Military Police, Signal, Professional Development, Personnel Actions, and Personnel Support.

Figure 4 illustrates the Warrant Officer Division — a totally new and centralized management organization for warrant officers. Previously, aviation warrant officers were managed by a single OPD element, while the remainder were handled by their respective career branches. The consolidation of warrant officer management and professional development was inevitable because of the duplicatory efforts in Warrant Officer Aviation Branch and other career branches. Warrant officers now have a central point of contact concerning career management.

The Officer Personnel Directorate is quite

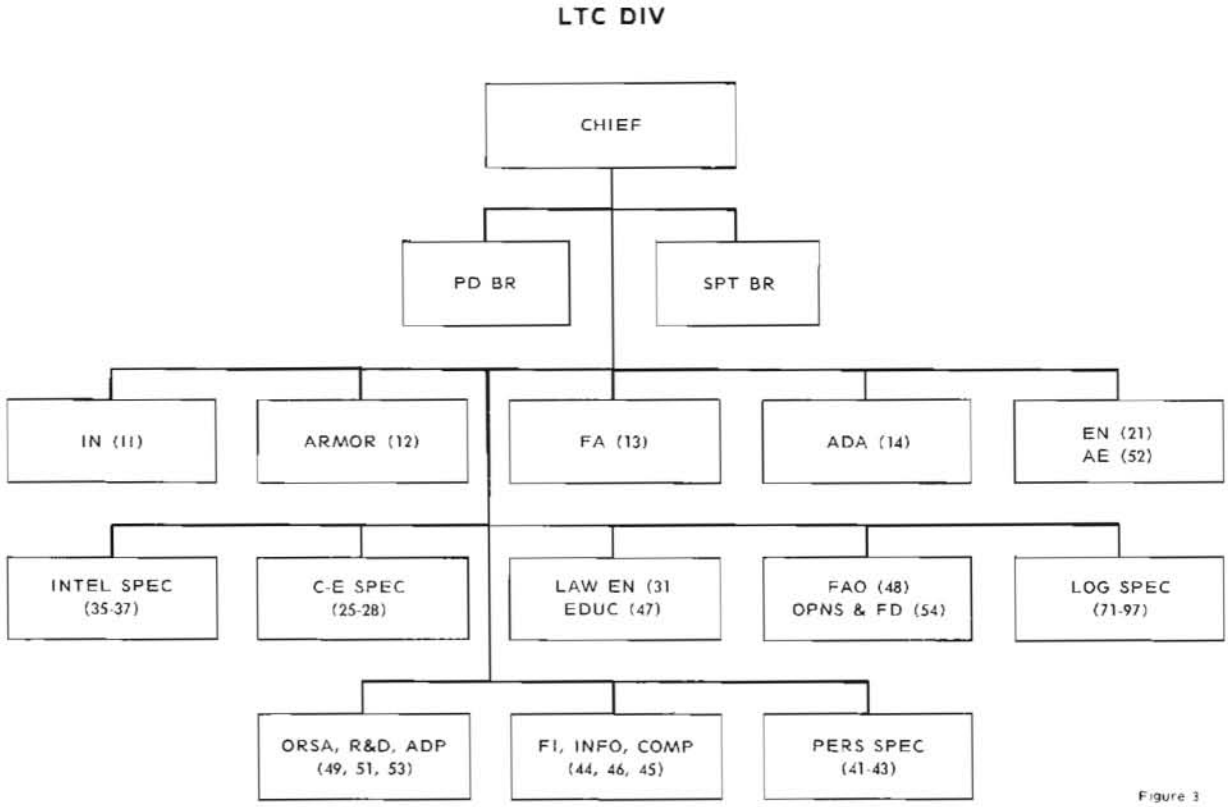


Figure 3

WARRANT OFFICER DIVISION — OPW

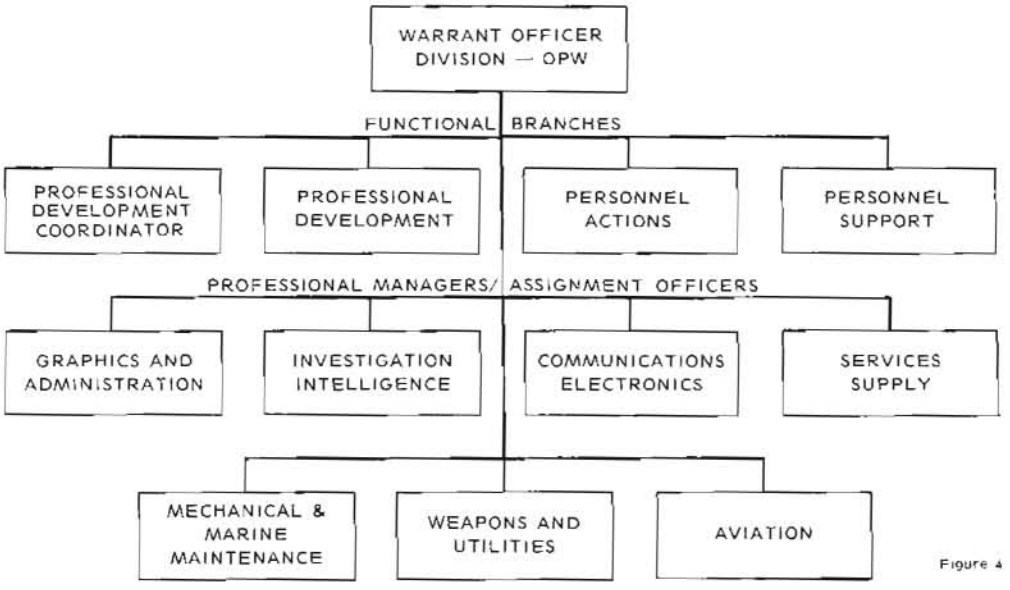


Figure 4

nthused with the new organization and anticiates the assignment officer playing even a greater future role in the assignment and professional development responsibilities for Army officers. The Assignment and Professional Development officer will coordinate freely with counterparts of other OPD Divisions and functional chiefs to insure optimum career development. Additionally, specialty monitors located at the functional chief level will be responsible for "orchestrating" the efforts of Division Professional Development officers. The specialty monitors also act as the point of contact for agencies, external to OPD, coordinating plans and policies regarding OPMS specialties.

There is some genuine concern of Engineer officers who have become accustomed to specialized career development treatment by Engineer Branch in the past. The question most frequently asked is: "Will the "P" in personnel be lost in the new organizational maze?" The answer is no! In reality, OPMS is nothing more than a formalization of an informal management procedure that has been practiced in the Corps of Engineers for years. Each officer will continue to have a "resident OPD expert" who is vitally interested in the individual, e assignment, and the officer's professional evelopment. As General Abrams, our former Chief of Staff, Army, so aptly stated in his indorsing comments of DA Pamphlet 600-3, "Officer Professional Development and Utilization", March 1974, ". . . how well you do in the Army depends not on our system of management but rather on your individual *efforts* and *dedication* to service."

Colonel Carl P. Rodolph, Jr., is Chief of the Combat Support Arms Division, Officer Personnel Directorate, Military Personnel Center, Department of Army. He was previously the Chief of Engineer Branch, OPD, MILPERCEN. Since being commissioned in 1952, he has served in a variety of command and staff assignments to include construction units in Europe; Vicksburg Engineer District; HQ, 8th US Army, Korea; tours with both ACSI and ACSFOR on the Army staff; and a previous tour in the Engineer Branch, OPD. Colonel Rodolph's Vietnam tours include assignments as engineer, 173d Airborne Brigade (Separate), CDR, 577th Engineer Battalion (Construction) and CDR, 326th Engineer Battalion, 101st Airborne Division (Airmobile). He recently served as CDR, U.S. Army Engineer School Brigade, Fort Belvoir. Colonel Rodolph is a graduate of the Engineer OAC, the Command and General Staff College and the National War College. His civilian education includes degrees in Industrial Management, Civil Engineering and International Relations. Colonel Rodolph is a registered professional engineer.

Getting The Gas Out

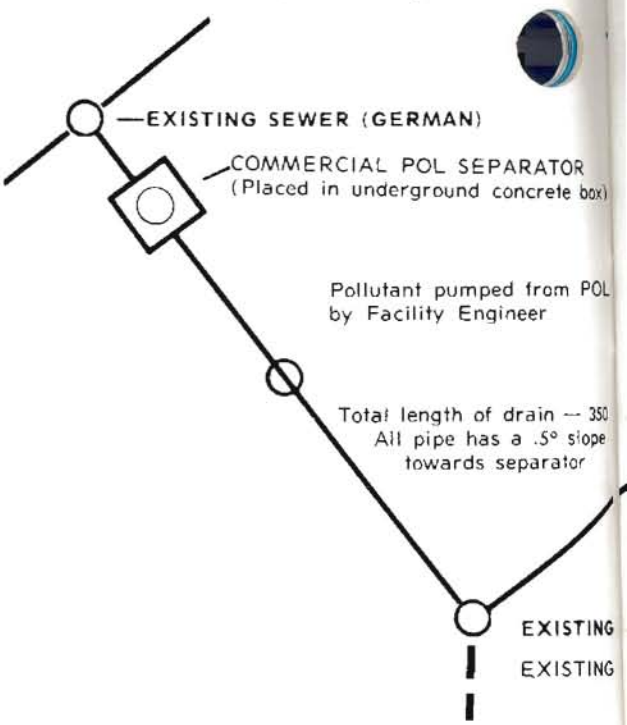
CPT William T. Maddox

During the fall of 1971, an excavation for an autobahn interchange near Aschaffenburg, Germany, produced soil that smelled like gasoline. Further investigation revealed that most of the surrounding land was also polluted. The German Waterway's Commission began a systematic search for the source which led them to a US Army Class III Point located on the edge of the city. At approximately the same time, a brewery one mile from the Class III Point discovered the presence of hydrocarbons in its well water.

Excavations in the area adjacent to the Class III Point indicated that all land north of the Class III Point was saturated with fuel. Army personnel began to dig test holes within the confines of the Class III Point. As a result, it was discovered that an underground pipe, previously a fill stand for tankers, had been leaking into the ground. This pipe had been capped off above the ground after an accident had damaged the remainder of the fill stand. It as surmised that the pipe had been leaking since the accident. Tests taken in the area showed that the fuel was passing through the soil into the natural underground water system and being carried downstream to the wells of the brewery. A large amount of the pollutant was also being absorbed into the soil on the north or downstream side of the Class III Point.

To provide an immediate solution, earthmoving equipment was used to remove all of the topsoil in the open field north of the Class III Point. Large open ditches were dug to a depth below the natural water table in order to allow the pollutant to "surface" with the water that filled the ditches. This polluted water was then pumped out of the ditches by 5000 gallon fuel tankers and dumped in a place chosen by the German authorities. This system failed due to the fact that a large quantity of water had to be pumped from the ditches in order to remove a small amount of pollutant. Since this method was time consuming and did not produce a lasting solution, it was abandoned after four months.

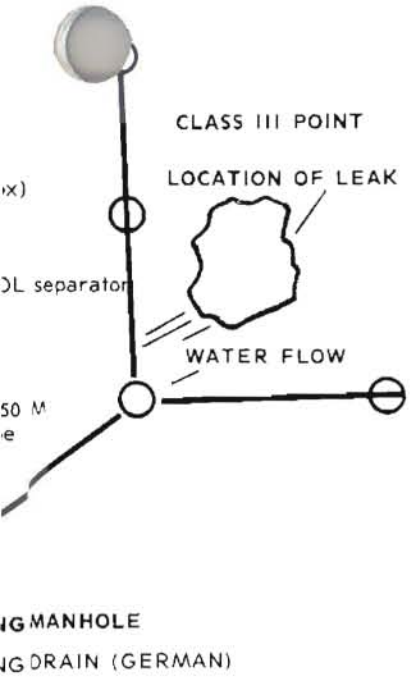
The pollutant flows on the surface of the water until it is stopped by the polyethylene film. It is then trapped by the gravel and flows into the perforated pipe.



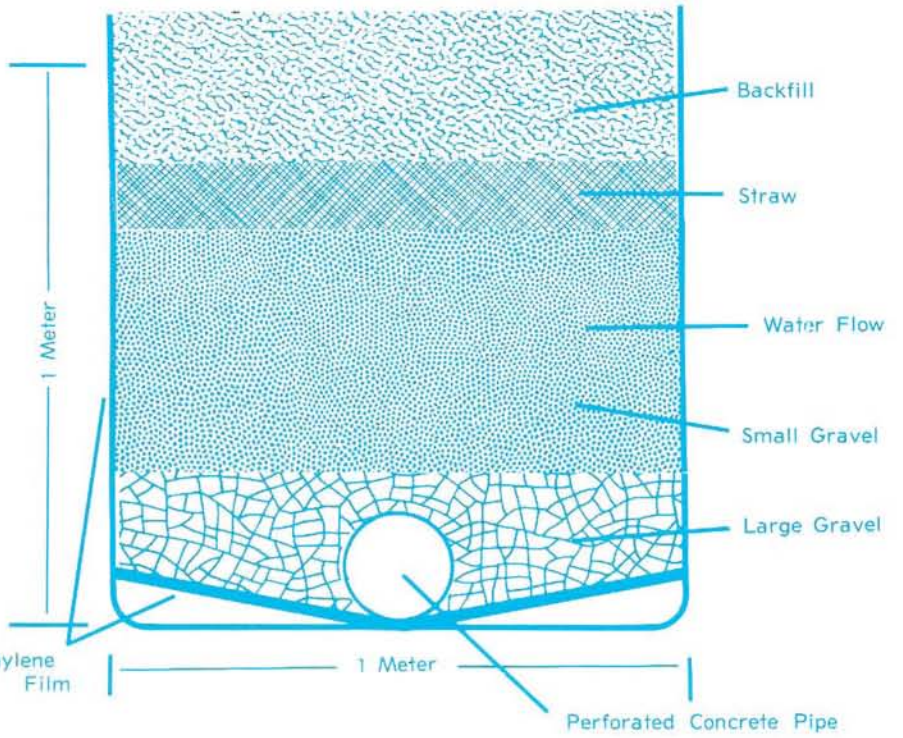
In March, 1972, US Army Engineer Command Europe, called on the 293rd Engineer Battalion (Const), to install a more efficient and longer lasting system. As designed by ENGCOM and the Facility Engineer, Aschaffenburg, the plan called for the installation of a POL separator and French Drain. The French Drain was to be installed as shown in Figures I and II. With this drain installed on the "downstream" side of the Class III Point, it was hoped that all of the pollution would be "skimmed" from the surface of the natural water.

In order to be effective, the French Drain had to be installed below the natural water table, and at a level where it would intercept the pollutant during both wet and dry seasons. A survey of the level of the water table indicated that the fluctuation was not more than two feet at any time. It was also determined that the water table was presently at a high point due to the spring snow and rain.

Working below the water table presented many construction problems for the engineers. The problem of how to place the concrete pads for the five manholes was solved by digging sump holes adjacent to the work area which carried the water away. The soil was then compacted and the pads placed. These sumps were continuously



TYPICAL CROSS SECTION OF A FRENCH DRAIN



pumped by using a submersible sump pump.

Due to the previous attempt to solve the problem, there were areas where the French Drain had to be placed in existing ditches which were full of polluted water and mud. By installing the POL separator first and working back from it, the polluted water in the open ditches could be pumped into the pipe. This allowed the pollutant to be collected by the separator. Earthmoving equipment was used to remove the three feet of mud in the bottom. Dry fill was then brought in and compacted to provide a base for the French Drain. As each section was completed, the water from another section was pumped into the pipe and the process repeated.

The usual spring rains caused some delay in the completion of the project, but this was kept at a minimum by only compacting the ditch in an area that could be completed and backfilled by the end of the working day. The duration of the project was 37 calendar days which was commended by the representatives of the city and the German Government.

The system began to work immediately. A large amount of fuel was separated from the water being pumped into the pipe during the construction phase. As sections were completed, water began to flow in the pipe continuously. After the last pipe was in place, a steady rate of flow developed and the separator had approximately three gallons of fuel in it per day. This fuel was pumped from the separator by the Facility Engineer on a daily basis.

Since it was impossible to determine the amount of pollutant in the ground, only broad estimates of the time required to remove the pollutant could be made. It was estimated that the major portion of the pollutant would be removed in the first year, with the remainder being removed in two or three years. Designed to operate indefinitely, the system will provide a lasting barrier should another spill or leak occur. These estimates were acceptable to the German Government.

The use of Army Engineers to solve this problem allowed the US Army to overcome a situation that caused a great deal of bad publicity and hard feelings with our host nation. A civilian contract for this system would have been more costly and the time of completion would have been delayed considerably. As a result of their outstanding work, 1st Platoon of C Company, 293rd Engineer Battalion, received an Engineer Command Outstanding Construction Award.

Captain William T. Maddox is currently Assistant Divisional Engineer, 1st Engr Bn, 1st Inf Div, Ft. Riley, Kansas. He holds a BS degree in engineering mechanics from the Univ. of Wisconsin and is a graduate of the Engineer Officer Advanced Course. His assignments include, Construction Platoon Leader, C Company, 293d Engr Bn, Baumholder, Germany; Adjutant, 293d Engr Bn; Aide-de-Camp, ADC-B 8th Inf Div, Baumholder, Germany; and Chief of Work Coordination, Facilities Engineer, Frankfurt, Germany.

DISPLAYING THE ITSCHER AWARDS presented to them by Lieutenant General William C. Gribble Jr., are from left: Capt. Quinn D. Cloward, Commander, Co D, 1457th Engr Bn (CBT), Utah National Guard; Capt. David E. Spaulding, Commander, Co D, 802d Engr Bn, 2d Engr Group, 8th US Army, Korea; and Capt. Glenn L. Campbell, Commander, Co B, 456th Engr Bn (CBT), 99th ARCOM, 1st US Army (Pennsylvania).

The Itschner Award

CPT Richard B. Polin

The Emerson C. Itschner Award is awarded by the Society of American Military Engineers (SAME) to the engineer company which best symbolizes the character, mission and performance of the Corps of Engineers. The award, presented annually at the Engineer Dinner at Ft. Belvoir, is named in honor of LTG Emerson C. Itschner, a former Chief of Engineers and past president of the society.

One of the aims of the award is to promote leadership in junior officers and to foster "espirit" in company sized engineer units. For the purposes of the competition, company sized units include all engineer numbered and lettered or headquarters companies, separate or belonging to a battalion, brigade, group or larger organization, and activated under a TOE/TDA. In the past, the award was limited to active duty units. In 1974, the competition was expanded, providing separate awards for both National Guard and Reserve units.

The winner, active Army, for calendar year 1974 was Company D, 802d Engr Bn, 2d Engr Gp, 8th US Army, Korea. The three runnersup were: 503d Engr Co (LE), 7th Engr Bde, VIII Corps, Europe; Company A, 92d Engr Bn, US Army Forces Command, Ft. Stewart, Georgia; and Company A, 4th Bn (Specialist), 4th Advanced Individual Training Bde (Engr), Ft. Leonard Wood, Missouri.

The Army National Guard winner was Company D, 1457th Engr Bn, Utah National Guard. The two runnersup were: Company B, 724th Engr Bn (CBT), Wisconsin Army National Guard; and Company B, 1092d Engr Bn (CBT), West Virginia Army National Guard.

The Army Reserve winner was Company B, 458th Engr Bn (CBT), 1st US Army (Pennsylvania). Runnersup were: Company C, 397th Engr Bn (CBT), 385th Engr Gp, 416th Engr Command, 5th US Army (Wisconsin); and Company D, 820th Engr Bn (CBT), 124th ARCOM, 6th US Army (California).

Although the designation of a single winner from a field of highly qualified finalists is a difficult chore at best, the Itschner Award Selection Committee would like to see more units compete for this award. The key to turning out a winner, in addition to having the qualifying credentials, is to adequately document the unit's activities over the course of a given calendar year. A company information specialist, armed with pen and camera, in conjunction with the various levels of local military and civilian news media, can go a long way toward enhancing the attractiveness of an already worthy endeavor.

It is true that some units, by virtue of their location or circumstances, have an advantage when it comes to the performance of tasks which

are apt to make the headlines. Nevertheless, it is equally true that an outstanding unit will perform its assigned missions in a most commendable manner at all times. General Bruce C. Clarke (USA Ret) once said, "The best unit in an organization is always the one which is excellent or best in all things." The description can be applied to any sized unit and strongly suggests that the measure of excellence is dependent neither on amplitude nor on prominence.

The award selection committee has recently submitted to SAME a proposed entry format to be used by next year's contestants. Although a new format has not been finalized, the following information can be used as a guide in preparing next year's entry.

The necessary information should be bound in a simple three ring folder or loose leaf notebook, and be compatible with the evaluation criteria discussed in the ensuing paragraphs.

The unit should provide a statement outlining its command mission. This is not to be confused with the general mission, as stated in TOE. Following this, mission accomplishments should be documented. Specifically, combat support tasks, construction tasks, and training and inspection results should be highlighted. Combat support, the crux of a combat engineer's mission, normally consists of engineer support of FTX s and other major exercises, to include the testing of supported units. Construction oriented combat support — the fabrication or maintenance of tactical facilities, is closely akin to construction support, which is simply the performance of engineer projects in general. In either case, these provide an excellent opportunity for engineer units to improve their "espirit de corps" while producing a tangible means by which their engineer skills can be realized and appreciated by supported units.

Training conducted should be listed by type — demolitions, river crossings, quarry operations, and so forth. MOS qualification programs should be discussed where applicable, with a listing of what the unit is doing to maintain high skill levels (i.e. night training, schools, etc.). Details of adventure training — a specific form of dynamic training, to include activities as rapelling, orienteering, cross country and survival exercises, should be discussed, as well as ATT/ORTT results, and any other innovations in training or management. Information such as results of inspection, should be well documented.

Types of professional Army programs being supported should be listed. Considered along these lines are: professionalism, Army life and enlistments.

- Professionalism: The unit should identify its educational development program, to include GED tests passed, high school diplomas received, and college courses undertaken. Additionally, officer and NCO development programs should be outlined.
- Army life: The selection committee will be examining those accomplished actions which contribute toward bettering the unit's living conditions. For example, efforts to improve EM living conditions, development of mutual trust within the command, and the effectiveness of ongoing programs such as human relations, equal opportunity, drug/alcohol abuse, and crime prevention.
- Enlistments should be categorized as either first term or career reenlistments.

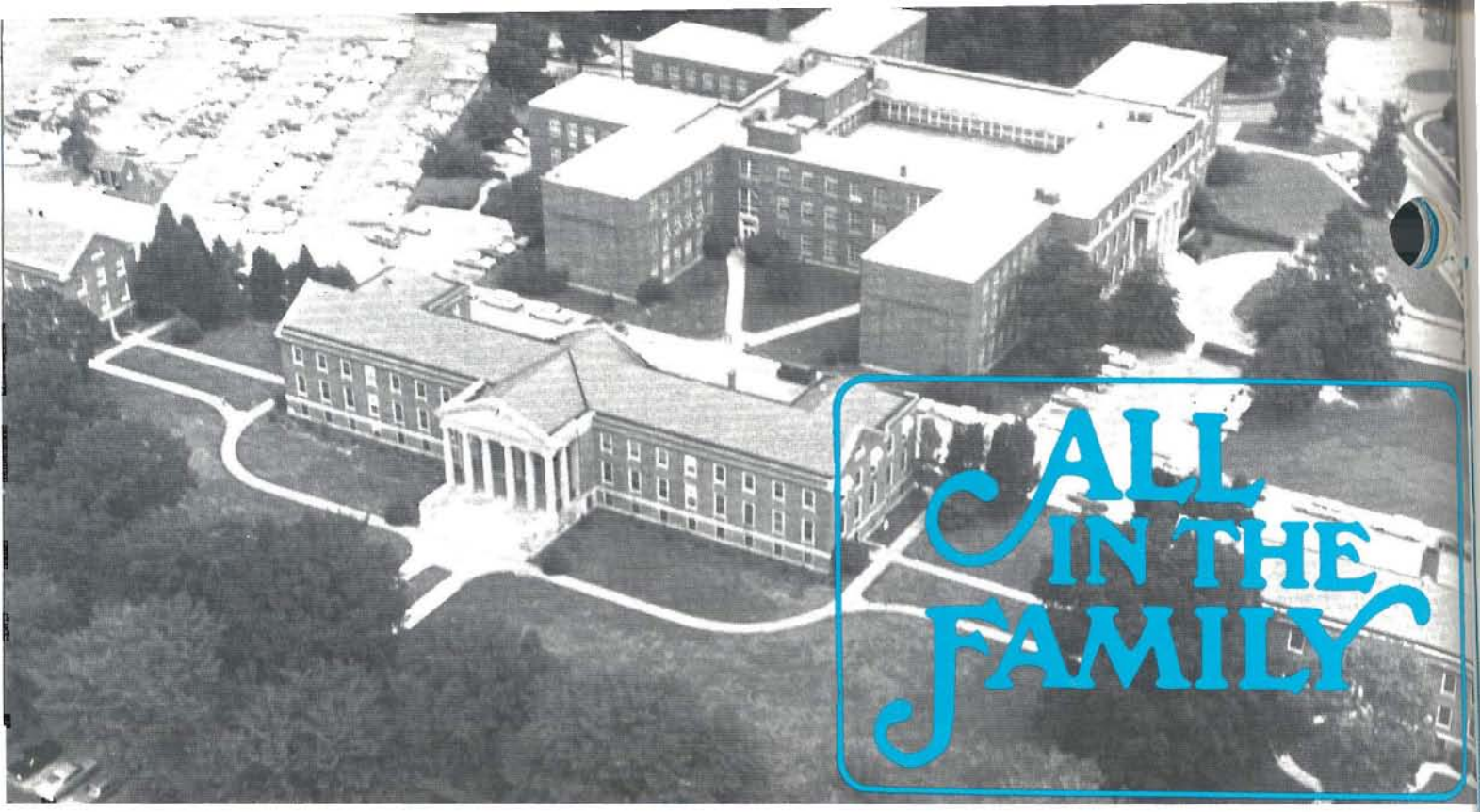
Another area of condsideration is welfare of the command. Here the unit should discuss its safety and accident prevention program, to include the number of reportable military accidents and miles driven, the number of reportable personal injuries, and the status of the Occupational Safety Health Act program. Additionally, the AWOL and Court-Martial rates will be analyzed in order to help determine the maintenance of good order and discipline within the organization.

The selection committee will also review the unit's contributions to the image of the Corps of Engineers. Community relations programs, especially with respect to improving the environment; domestic action programs; and any other unique contributions, such as recommendations for changes to doctrine, will be considered.

Two broad and significant areas of concern are: contributions to Army goals and unit affiliations (i.e. Army National Guard, Reserve, Allied, etc.), and the major commander's evaluation.

Finally, it should be emphasized that proper documentation of these, and any other reportable activities throughout the year, can go a long way toward meriting serious consideration for the Itschner Award. While it is true that actions speak louder than words, it must be remembered that the preponderance of outstanding engineer units around the world only serves to increase the difficulty of choosing "the best." The annual presentation of this coveted award provides a means of revitalizing the competition and renewing the challenge. How does your unit stand against the others? You can find out in 1975.

Captain Richard B. Polin is presently enrolled in a graduate program at George Washington University. He earned a BSCE degree from Lafayette College and is a graduate of the Engineer Officer Advanced Course, 1-75. He has served previously with 12th Engr Bn, Germany and US Army Engineer District, Far East, Korea.



ALL IN THE FAMILY

Colonel Charles E. Edgar III

We have all, from time to time, received a letter advising of a new assignment. It frequently concluded with the often repeated phrase: You will find this assignment to be both challenging and rewarding.

It is true sometimes the job lives upto its billing, while on other occasions, it does not pan out quite the way in which it was anticipated. What follows is my attempt to share with you an insight into an assignment which falls into the former category. Specifically, my purpose is to tell you about the challenging and rewarding assignment to the United States Army Engineer School (USAES); what is going on here; what it means to you, the Corps and the Army and to urge you to seek duty here at the "Home of the Engineers."

Before discussing assignment to the USAES, one cannot talk about the Engineer School without considering the rest of the Engineer team here at Fort Belvoir, all of whom contribute today toward making Colonel William Fairfax's former property, truly the "Home of the Engineers". The specifics of assignment to the Engineer Center are worthy of separate treatment and will no doubt be addressed in a subsequent issue of *The Engineer*. Suffice it to say now that the school and the center are equal partners in the efforts here at Fort Belvoir to produce and train the best Engineer possible to meet the needs of the Army.

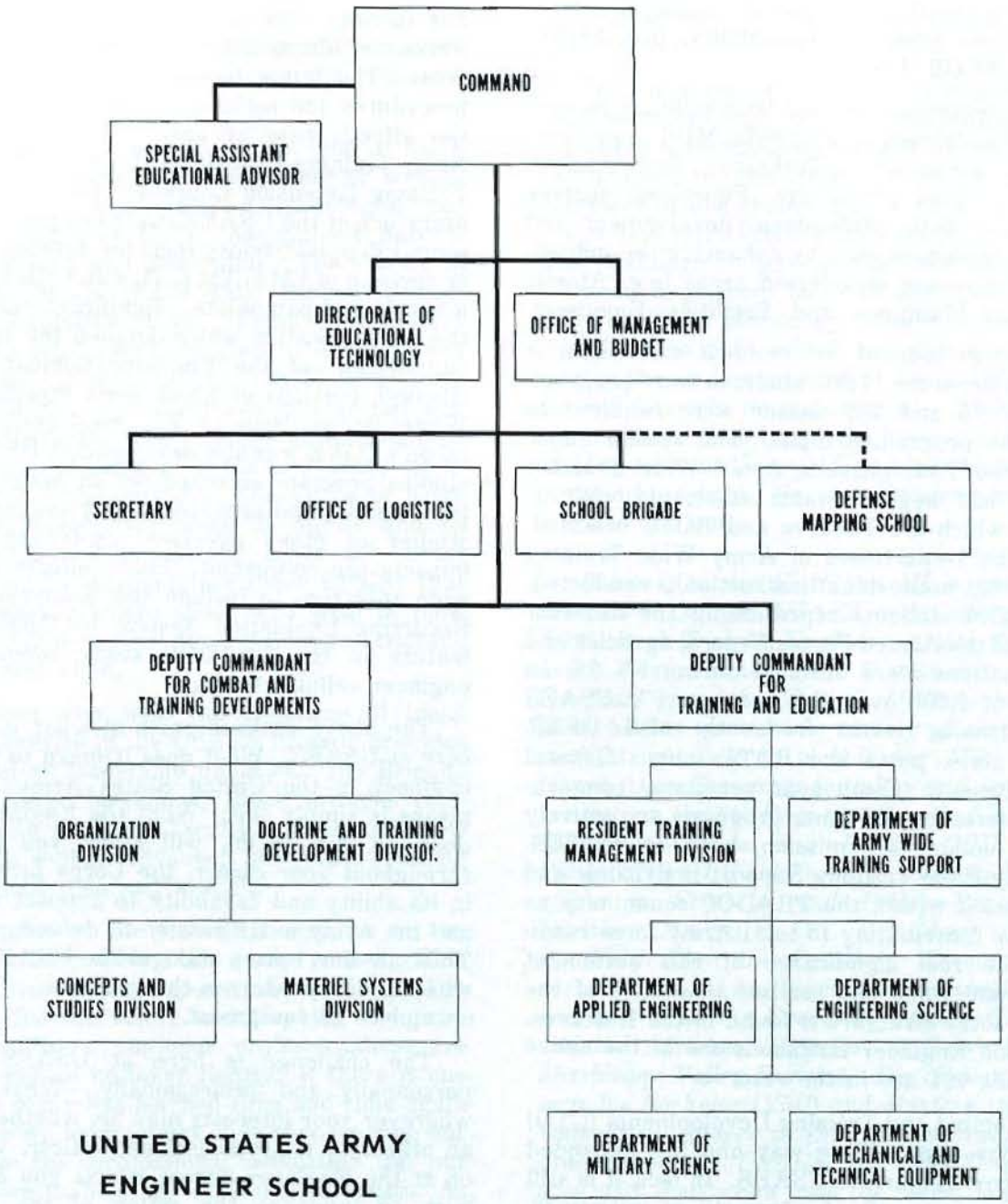
The USAES's story really needs to be told to our Engineer community because if you were like me prior to my assignment here, your knowledge too, was limited and you basically had a "student view". That is, you attended the Engineer Officer Basic (EOBC) and Engineer Officer Advanced (EOAC) Courses. If this describes you, you are far from alone because I have found this true of most engineer officers. Alternatively, you might have had a previous assignment here on the staff and faculty. In either case, that experience is probably your perspective of USAES and that is where it ends. What's more, and which is not well known is that the student or former instructor perspective is only the tip of the iceberg in the total of activities currently taking place at USAES. These activities are at the same time interesting, exciting and far-reaching. In many instances, they are also dynamic and always there is the challenge. The challenge . . . Your reaction at this point probably something like — "Oh really, at Belvoir, the Engineer School . . . Why I remember . . ." Yes, we all remember. However, we remember the way it was — not the way the USAES is today!

The USAES mission assumed new proportions with the reorganization of the Department of the Army staff. The Directorate of Military Engineering and Topography, Office of the Chief of Engineers, was eliminated and its functions distributed to other organizational elements of the

Department of the Army. Additionally, the Combat Development Command, with its Engineer Agency, was deactivated. As a result, the USAES assumed new and increased mission responsibilities. As such, the Engineer School is now the fountainhead of military engineering within the Army. This encompasses both formal professional development and skill progression training, as well as the responsibility for combat developments, to include concepts and materiel system development. Thus, the mission of USAES is not only to educate military engineers but also to develop the doctrine which guides our whole reason for being — namely support of the Army in the field.

In order to accomplish our mission, we have a Deputy Commandant for Training and Education (DC/T&E), a Deputy Commandant for Combat and Training Developments (DC/CTD), a School Brigade to provide administrative support and control for the staff, faculty and students, plus the requisite administrative staff to provide comptroller, logistical, educational and liaison support. This organization is outlined in the chart below.

From the chart, it will be noted that the Defense Mapping School (DMS) is under the operational control of the Commandant. DMS, commanded by an Engineer officer and staffed



UNITED STATES ARMY ENGINEER SCHOOL

by all the military services, is an activity of the Defense Mapping Agency. It provides instruction to USAES students formerly taught by the old USAES Department of Topography.

Despite the changes, the heart of our mission here at USAES remains to provide well trained and educated engineer soldiers. This can be divided into two major parts — the resident curriculum and Army Wide Training Support (AWTS). The DC/T&E provides 30 resident courses of instruction: 13 are professional development, 14 skill progression and 3 functional.

The professional development courses are designed to prepare commissioned officers, warrant officers and noncommissioned officers to effectively perform the duties required in assignments of progressively greater responsibility, (e.g. EOBC, EOAC, ENCOB, ENCOA).

Skill progression courses train military personnel in skills related to a specific MOS (e.g. Engineer Equipment Repair Technician, Soils Analyst and Power Pack Specialist). Functional courses complement both professional development and skill progression courses by enhancing the individual's effectiveness in selected areas (e.g. Atomic Demolition Munitions and Facilities Engineer).

The magnitude of the resident curriculum is considerable: some 11,000 students were programed in FY 75 and 333 classes were required to satisfy the programed input. The second major part of the T&E mission, Army Wide Training Support, has key programs associated with it, many of which are Reserve and ROTC oriented. It is in the Department of Army Wide Training Support that nonresident instruction is conducted. Some 22,000 students representing the different branchs of the Armed Forces,Federal agencies and foreign nations were enrolled during FY 75, an increase of 7,000 over the previous FY. USAES mobile training teams frequently visit USAR schools, units, posts and ROTC units. General Officer Reserve Component seminars, commander's conferences and other programs are actively pursued under this mission here at USAES. Our Army Wide Training Support is dynamic and is recognized within the TRADOC community as materially contributing to total Army force readiness. The real significance of this statement comes home when one realizes that 70% of the engineer force structure is found in the Reserves. Forty Nine Engineer Battalions are in the active force while 101 are in the reserve.

The Combat and Training Developments (CTD) mission has come a long way and has expanded much since its return to USAES. In fact, it is still growning as a result of a variety of initiatives. There is constant and continuous discussion and coordination between developer and instructor. The ideas of both are "key" in the total development and training products are improved as a result of such discussion and exchange.

Many and varied programs comprise the CTD mission. The organizational development program has as its objective the keeping of all engineer TO&E s current, (some 90 in number) as well as developing new ones as required by new equipment, doctrine and concepts. The Material Development Program concerns itself with new and improved engineer equipment and its operational test and evaluation. Training development deals with both individual and unit training. The former includes the development of MOS job descriptions and testing — key features in on going Enlisted Personnel Management System (EPMS) development. The latter includes the determination of procedures and techniques that serve to increase the effectiveness of unit training, such as the Army Training Evaluation Program (ARTEP) and Training Extension Courses (TEC). The training literature of the USAES (we have proponency for some 195 publications), includes development and/or revision of FM's, TM's, TC s and "How to Fight" manuals and pamphlets. Significant recently was the TC publication which detailed the concept for employment of the Engineer Combat Battalion (Heavy), portions of which were reprinted in the Winter-Spring issue of *The Engineer*. This battalion's TO&E was also developed at USAES. The studies program encompasses in house and contract studies and provides supporting input to the studies of other agencies insofar as engineer impacts are concerned. These efforts covered a wide spectrum to include the Scenario Oriented Recurring Evaluation System (SCORES), a key feature in the TRADOC study community, to engineer cellular teams.

The above outlines much of what is going on here at USAES. What does it mean to you as an engineer in the United States Army? What it means is simply this: What the Engineer School does, or fails to do, will affect you personally throughout your career, the Corps professionally in its ability and capability to support our Army and the Army in its mission to defend the nation. Thus, all of us have a stake in the USAES product whether the product is the graduate, a document or a piece of equipment.

The challenge is here at USAES — both personnally and professionally. What ever or wherever your interests may lie, whether you are an officer or noncommissioned officer, what goes on at the Engineer School affects you and if you wish to influence the action of the Corps of

Engineers and indeed certain aspects of the Army, you should fight to be assigned here. As an instructor you can personally put your stamp on literally hundreds of resident students, both officer and enlisted. This opportunity presents you with an ideal and meaningful way in which you can use both your own field experience plus any special academic education you may have received in any of the many disciplines pursued by Engineer officer and enlisted students. Personally, you can experience the professional stimulation that comes from exposing your thoughts and ideas to the analysis and criticism of others. Furthermore, what better chance is there to get surfaced and possibly adopted than those set techniques you learned in "the school of hard knocks?" We especially desire instructors who have not only the technical expertise but also the practical experience of having led at the squad, platoon, company, battalion and group levels.

If your druthers lie more in the field of R&D, force planning, personnel management or writing fields, you can easily find a meaningful and productive home in CTD. Assignment here is exciting, difficult and demanding. The Family of Scatterable Mines (FASCAM), Ribbon Bridge, Fuel Air Explosive (FAE), Family of Military Engineer Construction Equipment (FAMECE) and the Medium Girder Bridge (MGB) are some examples of CTD's involvement in materiel systems development. The concept of employment and the basis of issue of these and other items reflect the USAES imprint. The Corps of Engineers is proponent for some 32 officer and 63 enlisted MOSs. Many of the latter are under consideration for consolidation under EPMS. It is in this endeavor where those who wish to plow new ground in personnel development and training will find their nitch.

For those who seek the challenge of troop command, service in the USAES Brigade provides a testing of all leadership qualities. The Brigade comprises three battalions, which includes command of both staff and faculty, officer and NCO students, as well as Advanced Individual Training (AIT) enlisted men and women.

The impact of the USAES instructor or developer is far-reaching in every sense. This assignment is, in fact, a grave responsibility. Development for the future and teaching the principles of military engineer professionalism are tasks that cannot be taken lightly. If there is one lesson our Army has learned time and time again in the wars we have fought, it is that we owe our success to the professional education of our officers more than to any other single factor. As our doctrine was evolved, it was thoroughly taught to our junior leaders. Our officer professional development courses have provided the proof of the pudding. As a result, a similar program is now in effect for our most outstanding noncommissioned officers (NCO). This expansion of a proven cycle must continue to be strengthened and improved. Experienced, mature instructors and developers are essential if we are to achieve success on the modern battlefield, which is ever increasingly complex and dynamic. It is a fact of life that the product of our officer and NCO professional development courses will influence the combat engineer support and, indeed the combat operations, of the Army for years to come. In today's smaller professional Army, we cannot afford to produce an inferior quality officer or NCO graduate. If war comes, we must win the first battle.

The foregoing provides only a window to view just some of the ongoing activities here at USAES. A complete list would be too numerous to mention in this reading. We here at the Engineer School encourage you to write or call us if you have questions about assignment to USAES. The challenge is here at Fort Belvoir. There is responsibility, room for individual initiatives, the opportunity to personally influence the future of the Corps in both officer and enlisted ranks, as well as the equipment we will use and the doctrine we will follow in its employment. Lastly, there is the reward: knowing you have contributed to making a better Corps of Engineers to support the Army in the field. No true Engineer can ask for more or do less.

Colonel Charles E. Edgar, III is currently the Executive Officer, USAES and will become the Little Rock District Engineer in late July. Since being commissioned as a Distinguished Military Graduate from the Virginia Military Institute in 1958, he has served in a variety of command and staff assignments to include the 237th Engr Bn (Combat) in Germany; Battalion and Group Advisor duty in the 6th Engr Gp (Const), ARVN; Chief, Education Section, Engr Branch, OPD; Engineer Plans Officer, I Field Force Vietnam and as a staff officer in Strategy and Policy Branch, Plans Division, ODCSOPS, DA. Col Edgar commanded the 577th Engr Bn (Const) in Vietnam. He has served as an Area Engineer, Louisville District and in OCE as the Executive Officer, Civil Works and the Assistant Director, Civil Works, Lower Mississippi Valley Division. His civilian education includes Bachelor (VMI) and Masters (Iowa State University) degree in Civil Engineering. He is a graduate of the USAES, the CGSCC and graduated with distinction from the Naval War College. Col Edgar is a Registered Professional Engineer.

OERs

LTC Leslie H. Savage

If the Chief of Staff, Army, knew every officer on active duty well enough to evaluate his/her manner of performance and potential, there would be little need for the Officer Evaluation Report (OER) system. Unfortunately, the size of our Army precludes this and some type of evaluation system is therefore required to determine how well, or poorly in some instances, an officer is performing his job. Despite the Army's efforts to devise an optimum system, such a goal continues to elude us and the present OER (DA Form 67-7) is no exception. However, it is extremely important that personnel performance be evaluated objectively and that the OER system be responsive to both career development and selection boards. Why is this important? There are two important reasons:

- The OER system is designed to accurately reflect the manner of performance of specified duties, over a rated period, in a form readily usable by Department of the Army (DA) selection boards and career branch personnel.
- The entire efficiency file is reviewed by branch personnel managers for all personnel actions. Although education (civilian and military), experience, availability for reassignment, and skills are important, the OER remains the most important single document in an officer's official personnel records.

Given the above frame of reference, the standard question consistently asked is, "How can I influence the personnel system?" The answer is predicated upon how well a series of raters, indorsers, and reviewers evaluate your job performance. In other words, your OER should be a reflection of your "total performance." If you are a rater or indorser, it is your responsibility to provide both DA and the rated officer an accurate evaluation of both performance and future potential. The manner in which we undertake this objective analysis helps determine the total effectiveness of the OER system. An applicable

variation of the Golden Rule might well be: raters and indorsers should exert the same painstaking care in the completion of OERs on subordinates that they would expect in the preparation of their own reports.

A review of the large number of OERs, received at MILPERCEN during the past year, reveals that this rule is frequently violated or ignored. The first principal weakness is found in the narrative portions. Narratives are extremely important and provide the reader an insight as to special duties, professional attributes and overall degree of performance. In this regard, two sections of DA Form 67-7, Part III (Description of Duties) and Part VII (Comments), are extremely important. Clearly, we cannot expect an Armor or Infantry colonel sitting on a promotion board to be familiar with the duties of a company commander of a light equipment company; or of a resident engineer of an Engineer District; or of any other unique Corps of Engineers job. Therefore, it is essential that the specific assigned duties be clearly delineated (Part III provides for this) to include the magnitude or level of responsibility. However, Part VII of the DA 67-7 Form, presents a real challenge since previous OERs (DA Forms 67-5 and 67-6), had no space restrictions thereby permitting narratives to be expanded on additional pages. Raters enjoying an ease of facility with the "Queen's English" were frequently able to transform average performance into something that would do justice to the General Officer Corps. This ability to articulate often resulted in a distorted image of an officer's ability and/or performance, and placed an additional reading burden on the tight of selection boards.

By contrast, DA Form 67-7 restricts comments to the space provided on the form. The rater and indorser, stripped of the potential for substantial verbiage, must therefore write concise, succinct statements describing an officer's manner of performance. Unfortunately, some rating officials have not matched the challenge, in that, they manage to utilize the space with less than substantive evaluations, and with information of limited use to personnel managers and selection boards. For example, the following comments described a lieutenant serving as S2 of a combat engineer battalion: *"This officer performed a variety of tasks with considerable skill and within specified parameters. He was always pleasant in my presence. He supported the Equal Opportunity Program."* Another comment described a captain who commanded an engineer construction company. It read, *"This officer demonstrated competence and professional judgement in accomplishing the myriad of related and unrelated requirements placed on his unit."* Were these good narratives? Compare the two previous comments with that of an indorser who described one of his company commanders: *"This officer is the most outstanding company commander in the group which consists of nineteen engineer companies. He is head and shoulders above his peers. His company consistently excelled in every project and mission assigned to include several extensive periods of engineer support to an infantry brigade operation."* In a few succinct, but illustrative sentences, this indorser additionally described three spceific projects accomplished by the unit. Anyone reading this OER has a clear picture of the respective officer's performance and potential. The real challenge is to rate an officer whose performance has been average. Selection Board members must be able to determine the most deserving for promotion or selection for school. Accurate and comprehensive ratings can be more easily accomplished if the rater is objective and makes clear and concise observations.

In summary, the success of any evaluation system depends on the combined efforts of the officer corps. How much time did you spend on a subordinate's OER? How well did you really describe his manner of performance? Were you guilty of being vague and verbose, or did you write clear, simple statements telling *what* the officer did and *how well* he performed the assigned job?

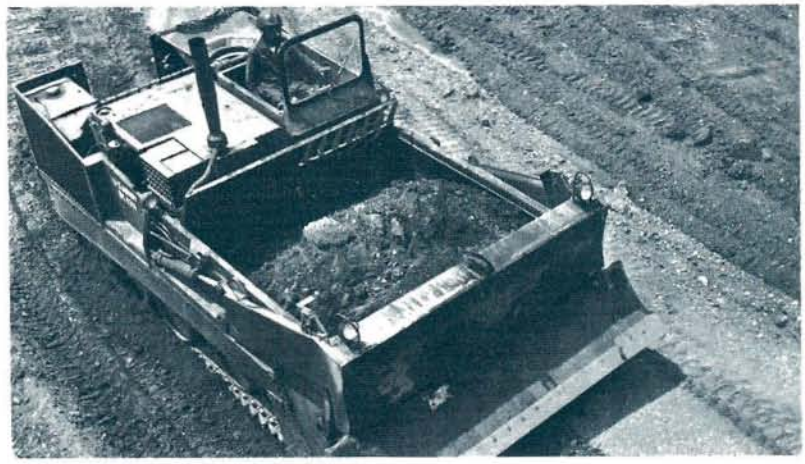
In conclusion, there is no document more important to a military officer than the OER. As such, it is the keystone for career development, promotion, selection for schooling, separation, and other personnel activities, all of which greatly affect an individual's career. Bearing that in mind, each of us should give the same consideration, time and thought to the writing of an OER as we would expect of those who prepare our report. The officer corps deserves nothing less.

Lieutenant Colonel Leslie H. Savage is Chief, Personnel Actions, Combat Support Arms Division, Officer Personnel Directorate, US Army Military Personnel Center. He is a 1958 graduate of the Virginia Military Institute where he received a Bachelors Degree in Civil Engineering. He also earned a Masters Degree in Civil Engineering from the University of Illinois. His military education includes the Engineer Officer Advanced Course, Army Command and General Staff College and the British Army Staff College. He served three tours in Vietnam to incluse 18 months with the 65th Engineer Battalion, 25th Infantry Division. Other assignments include the 168th Engineer Battalion, the 32d Army Air Defense Command and Commander, 82d Enginner Battalion in Germany.

MOBILITY AND THE CONTEMPORARY UET

Robert W. Harrington

The mobility doctrine has its foundation in the principles of war. One of its salient doctrinal precepts is that combat support units should have mobility which equals that of the units they support. Thus, combat engineer units must be sufficiently mobile to provide combat support in the ground gaining environment of the forward battle area. It is this precept which has provided the impetus for the development of the Universal Engineer Tractor (UET). The UET, as it is commonly known in the "engineer family," has been under development for many years. The current requirement for the UET is stated in paragraph 636c(5) of the Army's Catalog of Approved Requirements Documents. This requirement is for an armored, amphibious, combat engineer tractor having the capabilities of dozing, rough grading, excavating, hauling and winching; capable of being air transportable and assault aircraft landed; and having high mobility. The tractor will be the principal item of earthmoving equipment for divisional and corps combat

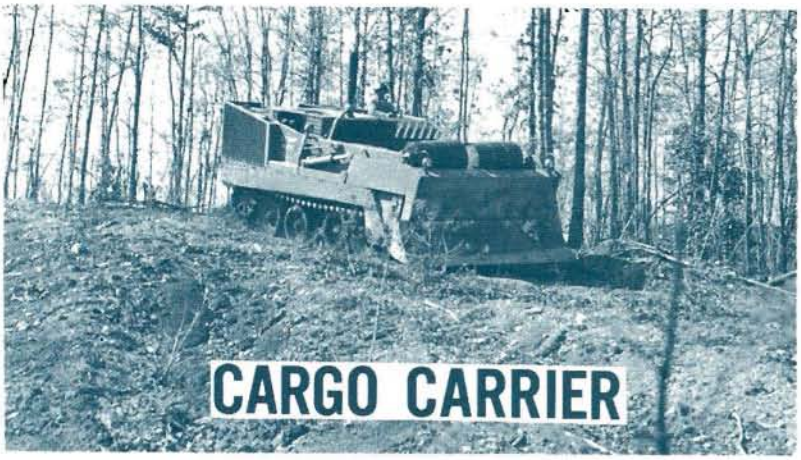


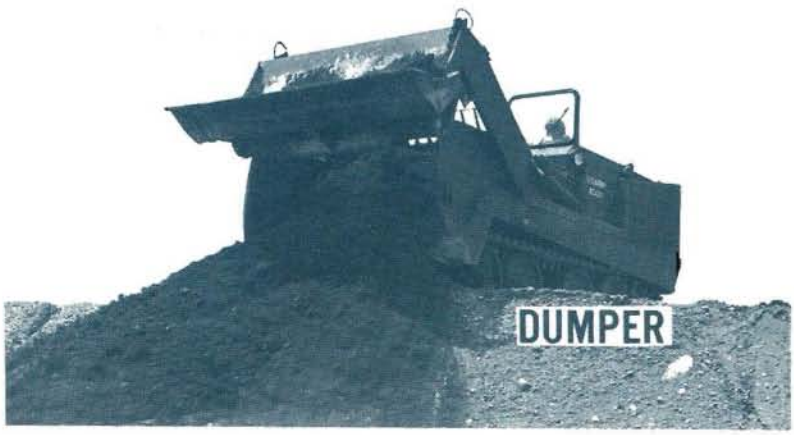
engineer units and will replace the crawler tractors in these units. Additionally, the UET will provide an increase in hauling capability and a scraper capability not presently organic.

The development of the UET has spanned many years and undergone four generations of prototype evaluation. A search of the "archives" establishes 1958 as the year in which the engineer R&D community decided to embark on a program to develop a UET. Industry bids had been solicited earlier by the Mobility Equipment Research and Development Center, Ft. Belvoir, VA, (formerly Engineer Research and Development Laboratories) for the forerunner of the UET — a rubber-tired ballastable airborne tractor to fulfill the needs of airborne engineer units. Following this initial effort were feasibility studies, an industry proposal for a ballastable crawler scraper-dozer, prototype fabrication, and the eventual drafting of military characteristics which were to guide a materiel development program.

The above efforts were followed by a frustrating period for the materiel developer. Within the Army there were divergent views on what the UET should be. Innumerable reviews and assessments were made of the program, but no firm requirement or program was forthcoming. Although initial approval of the military specifications was obtained in 1960, revisions to the requirement were pending at all times during the development stage until the approval of the Qualitative Materiel Requirement (QMR) in 1965. Even though many of the changes were major, the basic tractor remained the same. For example, the tractor was orginally intended as an earthmover for use by airborne engineer units. The emphasis was then changed to that of a squad vehicle for use by other combat engineer units as well as airborne units. Subsequently, a requirement was added for armor protection for the operator and lateral protection for troops being transported in the bowl of the UET. However, the years went by without a UET.

Why then has it taken so long? There are many reasons. It will be too lengthy to explore each of these adequately within the scope of this article. However, two observations are particularly germane. First, the differing opinions on the need, capabilities, utilization and technological approach to the UET meant that a firm requirement was not established until the initial development of the item was nearly complete. As previously stated,





the QMR was not approved until 1965, making it an after-the-fact occurrence rather than providing a coordinated guide for the development program. Secondly, and perhaps of greater importance, was the lack of a viable materiel development management program to firmly establish user requirements, to clearly define these requirements to the developer and to industry, to provide for continuous monitoring of hardware development and testing, and to institute the degree of management discipline necessary for timely decision making.

The present UET is intended to provide combat engineer units, especially those in support of mechanized and armored units, with a versatile tactical earthmover possessing essentially the same mobility as vehicles of the supported units. The UET is designed to travel light and work heavy in keeping with mobility requirements. It features a front loading scraper bowl and a hydraulically operated apron with a positive load ejector. The dozer blade, which is integral to the scraper apron, is hinged and can be folded to increase the angle of approach when the tractor is used as a transporter. The engine and power train are in the rear of the tractor. The UET converts to an armored vehicle without attachments by closing an armored hatch which is normally stored behind the operator, who is the only crew member. For general construction work, a windshield and canvas soft top can be installed. Dozing and scraping are accomplished by raising and lowering the entire front of the tractor by means of the hydropneumatic suspension system, rather than by independent operation of the blade and bowl. At the option of the operator, the suspension system of the UET can be quickly positioned for a smooth, fast, resilient ride over uneven terrain, or made rigid and tiltable for slow-speed maneuverable dozing, excavating, loading, pushing, or towing operations. Tree felling is accomplished by raising the apron, and consequently the dozer, to obtain additional leverage. Although the UET weighs only 32,000 pounds, its work capability for bulldozing operations can nearly be doubled by loading the scraper bowl with earth ballast, thus increasing the tractor's gross weight by approximately 20,000 pounds. Moreover, the open bowl, front loading configuration is exceptionally well suited for self-loading, transporting and unloading of palletized loads, barrier materials, or other items needed to support combat operations. In addition to its ability to perform bulldozing and scraping functions, the UET can also function as a haul vehicle capable of speeds up to 30 mph. This mobility enables the UET to move individually and rapidly from job to job, on-road or cross-country, as well as move in convoy without the need for truck-tractor and semi-trailer support. The UET has the capability of crossing inland waterways by floating and propelling itself with its tracks. This limited swim capability in calm water is equal to that of the armored personnel carrier, M113. However, before amphibious operations, a seal must be installed on the scraper apron; this requires about 15 minutes. With the bulldozer blade, the UET can prepare shore entries and

exits for other amphibious vehicles — for example, in the assualt phase of river crossing operations. It can also wade and work in water too shallow for swimming. Using its winch, the UET can assist other vehicles in crossing obstacles and for recovery operations.

Although it can be employed in airborne operations, the UET is intended for use mostly, but not exclusively, by combat engineers in support of mechanized and armored units and will replace the crawler tractors as well as their transport vehicles in these units.

Another potential use of the UET is "digging in" of field artillery for firing batteries. In 1973, the Field Artillery School informed the USAES that, in their opinion, earthmoving equipment presently in the inventory did not possess the mobility characteristics required to support artillery units in the fluid battlefield environments postulated for the future. As such, they expressed an interest in the UET, and, in conjuction with the USAES, will monitor future testing to aid them in determining the suitability of the UET for field use.

Since late 1964, the UET has undergone extensive engineering and service testing by the Army's Test and Evaluation Command (TECOM), Aberdeen Proving Grounds, MD., in which military utility and functional performance were demonstrated. Test reports concluded that the UET performed its earthmoving and hauling functions in an outstanding manner — when it was operational. However, failure to meet reliability, durability, and maintainability requirements have precluded its acceptance for use by troops in the field. The Army Materiel Command (AMC) conducted a Development Acceptance In-Process Review (IPR) on the UET in October 1969. The materiel developer's position to accept the UET was not agreed to by the other three voting members (USACDC, USACONARC, and LDSRA). The major point of disagreement concerned the improvement in reliability that could be expected through increased quality control and hard tooling in quantity production. Since this was essentially a technical question, the four IPR members recommended to Department of the Army (DA) that an *ad hoc* group of the Army Scientific Advisory Panel be presented the UET problem for review and formulation of recommendations for future efforts.

The present development program for the UET is in accordance with the program plan recommended by the *ad hoc* group in their report to DA in 1970. A product management office has been established within AMC that has total program responsibility for completion of development and initial production of the UET. An updated QMR was approved by DA in 1971. Independent reviews of the UET drawing package and previous TECOM test reports was accomplished by awarding competitive shakedown and evaluation contracts to two firms with considerable experience in the production of high speed tracked vehicles. Each firm was furnished with a rebuilt prototype and all design data to assist them in their development of proposals for redesign, component testing, fabrication of prototypes, conduct of in-house testing, and support of TECOM acceptance check test. As a result of the proposals received, an Advanced Production Engineering contract was awarded to Pacific Car and Foundry Co., Renton, Washington, for accomplishment of the above tasks. As of this writing, the fabrication of four UET prototypes is complete and contractor shakedown testing is in process. Upon conclusion of this test phase, scheduled for this summer, the UETs will be shipped to Aberdeen Proving Ground, MD., where each tractor will undergo 650 hours of acceptance check testing. The primary objective of the check test is to demonstrate reliability and durability improvement and to reaffirm the performance and mobility data obtained from earlier TECOM tests.

Improving the low reliablility of the UET is a formidable task. The UET is more complex than any of the single purpose construction vehicles presently in the engineer inventory. Mobility and good performance at both high and low speeds has never been accomplished in a tracked construction vehicle prior to the UET, and complexity has been the result. Since reliability generally is a function of the total parts and components of an end item, the added components present another factor that makes the UET reliability goal difficult to achieve. If the check test demonstrates that reliability and durability have improved to a level which the Army can accept, then the UET may be adopted. If the UET survives and is adopted for Army use, production should begin in 1977 — 19 years after the program first saw the light of day! Only field operational use will tell us if it was worth waiting.

Mr. Robert W. Harrington is assigned to the Engineer School, Deputy Commandant for Combat and Training Developments, as an operational test and evaulation project officer with the Materiel Systems Division. His previous assignments were with the Department of Mechanical and Technical Equipment where he was involved in developing training courses in the operation, maintenance and repair of engineer missile support equipment for US and foreign military students, and with the Engineer Agency of Combat Developments Command as a project officer for test and evaluation of airborne and airmobile construction equipment.

CHAPEL OF HOPE

PFC Barbara Long

The construction of a complete chapel is a major project for any construction company, either military or civilian. The men of the 983d Engineer Battalion (Construction), who meet only one weekend a month, undertook such a challenge. Teachers, factory workers, store clerks, and accountants became carpenters, masons, electricians, and plumbers for two days a month.

The construction of a chapel was one of the most unique and challenging projects ever to be

undertaken by this battalion. It was the first project of this magnitude ever to be completely designed and developed by military units for civilians in this area. Up to this point, the battalion had only been involved in civilian projects which did not require the expertise of all the construction trades.

The "Chapel of Hope" is located on a wooded site at the Maumee Youth Camp. This is a State operated juvenile corrections facility located near the rural northwestern Ohio village of Neapolis. The American Gothic Chapel consists of a sanctuary which seats 100 people, classrooms, a general purpose room, storage and utility rooms, two rest rooms, and two offices. It even has stained glass windows, donated by a century old church scheduled for demolition.

The chapel serves delinquent boys, ages 10-15, who are first time offenders. They are able to attend non-denominational church services, Sunday school, and "Y" meetings in the chapel as well as a host of other activities.

The battalion became involved in the chapel project at the request of the Maumee Youth Camp Chaplain. His attempts to raise adequate funds fell short of his needs -- to build a spiritual center for the young men at the youth camp. Undaunted, the Reverend and his Volunteer Council (a group of civic minded business people) decided to contact the 364th Engineer Group and explained their plans to the Group Commander. The 364th then prepared the plans, incorporating materials which would be donated or purchased and therefore stay within the available budget. The plans for the chapel were prepared with the assistance of a local consulting architect. All plans were submitted and approved by the State of Ohio Architect's Office prior to construction.

The actual construction of the chapel by the 983d Engineer Battalion began in Spring 1974. Reservists from two Toledo, Ohio, based companies and the company based in Bryan, Ohio, worked on the chapel a total of three week-ends a month.

This battalion had never before undertaken so vast a project and the consequences proved very beneficial. For example, the battalion construction officer noted an improvement in the performance of the men when they were able to see the purpose of their efforts and took a sense of pride in the tasks they were undertaking. Instead of just studying their trades in the classroom or on small projects, the men of the 983d constructed a chapel for the less fortunate youth of their own community. The reservists view the chapel as a chance to improve their construction skills and at the same time benefit the community.

Two-thirds of the men working on the chapel learned their construction skills while on active duty. Most of the men do not practice these skills in their civilian occupations, and the chapel project gave them an opportunity to put these talents into practice. It also provided on-the-job training for men who were currently being trained by the Army Reserve as construction specialists.

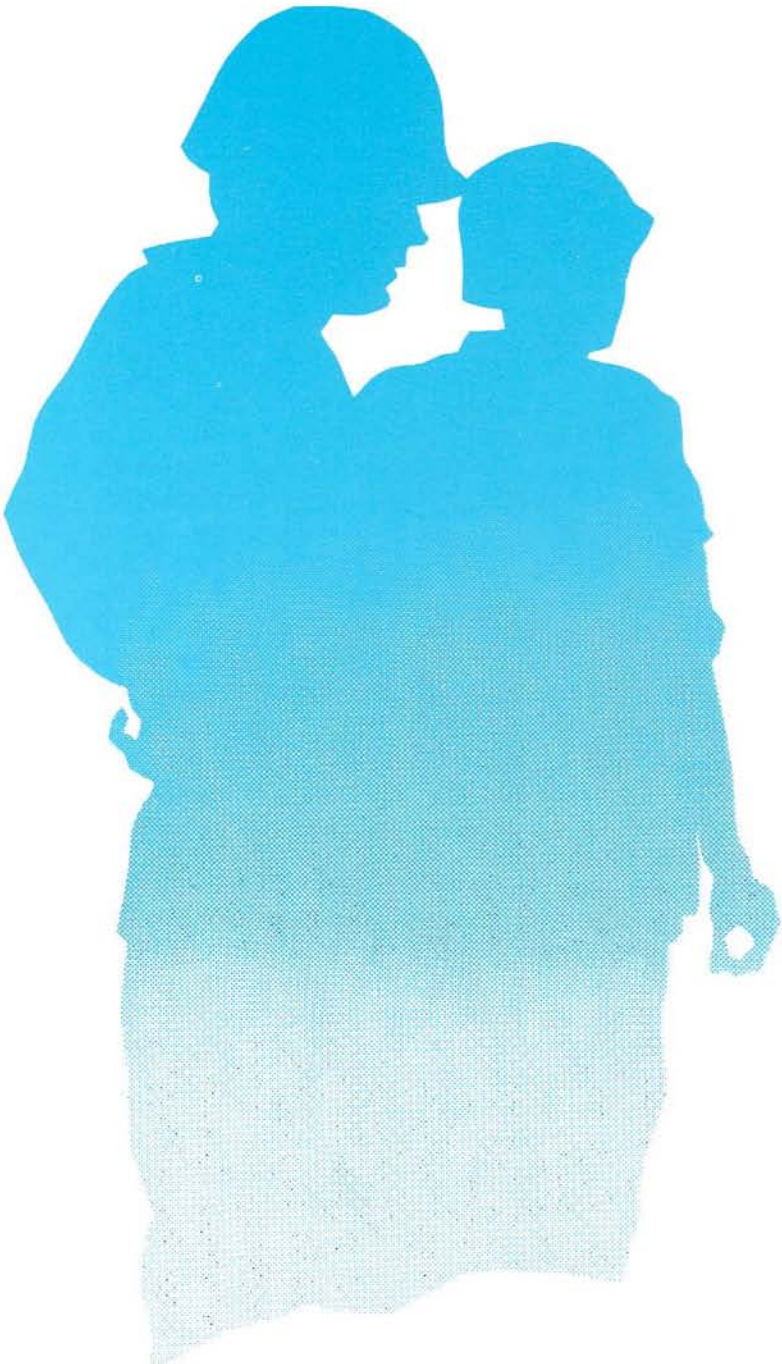
An added benefit of the project was the public interest and civilian cooperation it generated. A Woodville, Ohio, based heating and plumbing company seized the opportunity the chapel project gave them to help the Reserves in their efforts to provide a much needed facility for the boys of the Maumee Youth Camp. Another local civilian — an instructor at the Penta County Vocational School, assisted with technical problems in stone masonry and once the project got underway, other willing and resourceful civilians added their supprt. This type of civilian-military cooperation is unusual for projects undertaken by the Army Reserves. It was the civic nature of the project which spurred members of the community to volunteer their time and talent.

Numerous reservists also put forth extra effort on the chapel project and stepped up to the tremendous challenge of constructing an entire chapel. Rather than spending their week-ends and summer camps on remote chores, they spent their time on a project of which they and their families can surely be proud. It isn't often that reservists can take a Sunday drive with their families and show them a building they built. The chapel is tangible proof of the energy the men have expended on a meaningful project.

Since the Maumee Youth Camp is under the jurisdiction of the Ohio State Youth Commission, the land for the chapel was donated by the State. Materials were provided by donations from the camp's Volunteer Council. The labor, of course, was provided by the 983d. According to the battalions construction expert, the Reserves provided services worth over $40,000. The Reverend is quite aware of this and unhesitatingly adds, "Without the efforts of the Reserves the construction of the chapel would have been impossible."

The chapel was recently dedicated and is now a living monument to the volunteer efforts of the 983d Engineer Battalion.

PFC Barbara L. Long is an Information Specialist assigned to 983d Engr Bn (Const), USAR Center, Univ. of Teledo, Teledo, Ohio. She earned her B.S. degree in education from Michigan State University and teaches English, journalism and physical education at the secondary school level. She is married, has a three year old daughter, and is pursuing a graduate program in journalism at the University of Michigan.



The Corps of Engineers has undergone numerous changes over the past two decades. Guiding the direction and rate of change is the central concept of leadership. General Bruce C. Clarke, an outstanding military leader, gives us some food for thought in his article with respect to the key characteristics Engineer officers have displayed and must display if they are to continue in the proud traditions established by generations of Corps leaders. In these troubled and confused times, it behooves us to look back and reexamine some of our achievements and prepare ourselves for the defense needs of tomorrow.

The military engineer of today faces the challenge of the future from the vantage point of a proud heritage, firmly based on the traditions of accomplishment and leadership so well exemplified by great military engineers who loom large in the history of our country. Throughout its existence, the Corps of Engineers has been called on to perform an amazing variety of duties, in many fields of endeavor, often far removed from purely military activities. From its ranks the Corps of Engineers has always produced the man who was equal to the task. The list of the great is long, much too long to do more here than to mention a few.

The history of exploration and development of the West is filled with the names of Army Engineers — Lewis and Clark; Fremont, the "Pathfinder"; Dodge of the Union Pacific. Since early in the Nineteenth Century, Army Engineers have been charged with development of our rivers and harbors for navigation, and more recently with mitigation and control of floods. This brings to mind Humphreys and Abbot, Jadwin and Pick. Other names will always go together: Goethals and Panama Canal; Groves and the atomic bomb; Wheeler and the clearing of the Suez Canal; L'Enfant and the planning of Washington, D.C.; Thayer and West Point; Somervell and the Army Service Forces in World War II; Clay and the

THE MILITARY ENGINEER AND THE FUTURE

General Bruce C. Clarke

erlin Airlift; — the list of great engineers and eat accomplishments goes on and on. And from the Corps of Engineers have sprung many of our renowned combat leaders — Lee, Meade, Oliver, MacArthur, Hoge, and many others. All of these names are well known, as are their accomplishments. An examination of the common characteristics of these great leaders provides some clues to the needs of greatness.

All were men of a high order of intelligence and common sense. They were inquisitive and keenly alert. They had accurate minds, and were able to assimilate facts and arrive at realistic, practical decisions. All displayed the initiative and a sense of duty to seek out tasks, and to accept full responsibility for the accomplishment of their missions. They were good managers, able to grow to the size the job demanded. Above all, they were men of high ethics, and skilled human engineers.

High ethical standards are essential to the military engineer. Unswerving honesty, no matter how unpleasant the facts may be, is part of the tradition of the Corps of Engineers. However, honesty alone is not enough; it must be coupled ith high moral standards, the awareness of what right and what is wrong. The resultant — that hich we call integrity — provides the basis for greatness of character. When duty requires it, many men face the possibility of death in combat with high physical courage. But all too frequently, the moral courage to risk possible damage to their career for a rightful cause in peacetime is lacking in men of apparently great promise. The high ethical standards of a great military leader include the moral courage to face unflinchingly the risk of a blighted career in the cause of that which he believes to be right.

Human engineering, the ability to organize, manage, inspire, and lead people, cannot be over-emphasized in the catalogue of common attributes of great military engineers. True, they had to have a superior knowledge of the theory and techniques of engineering, but they would never have risen to this high estate had they not been able to inspire and direct the efforts of others to get the job done.

The role of the military engineer in the future has been discussed and examined at length. Estimates range from "We won't need him" to "He will be the most important member of the force." Obviously, the truth lies somewhere between. To those who believe that the role of the military engineer is diminishing in importance, it may be well to point out that each of our country's wars has demanded more of the military engineer than did the preceding war, and that in each of our wars, the engineer force was a larger part of the whole force than it was in earlier wars. The future holds many challenging problems for the military engineer. The traditional role of enhancing our mobility while impeding the enemy's requires better means of crossing natural and man-made barriers, and better means of slowing and stopping the enemy. Ways must be found to accomplish the many engineer tasks faster, better, and with fewer men. The ability of the Army to move in all kinds of weather or climate, and in all types of terrain, must be improved. And, as men move into space to the moon and to the other planets, the military engineer faces a host of new, exciting, and tremendously challenging tasks.

As long as men live, there will always be new worlds to conquer, new horizons to be developed, new projects to be completed. The future is bright with promise for the men of vision who will dedicate themselves to making their dreams come true. In the forefront of these is the military engineer.

Reprint from The Military Engineer, July-August 1961, subject: "The Challenge of Leadership".

NCOES

Sergeant First Class William D. Johnson

The Noncommissioned Officer Education System (NCOES) is an Army-wide program having two primary objectives: provide Army enlisted personnel with a program for educational and professional career development; provide each branch of the Army with professionally qualified noncommissioned officers. To meet the needs of the Corps of Engineers and its dedicated career enlisted personnel, the Engineer School has developed two progressive NCOES programs of instruction: the Engineer Noncommissioned Officer Basic (ENCOB) Course and the Engineer Noncommissioned Officer Advanced (ENCOA) Course.

The requirement for the NCOES stems directly from the basic needs of the U. S. Army for more effective leadership at all levels. The senior noncommissioned officer supervises or controls approximately 80 percent of the Army personnel resources. He is, therefore, the key man in the military management structure.

The continuing progress and success of our Army and the individual success of the NCO will depend in large part on his technical knowledge as well as his ability to effectively direct people toward an assigned objective. The noncommissioned officer has always been known as the "backbone of the Army"; however, there has until now been no structured program to provide for his continuing progressive professional development. Today's NCOES and tomorrow's EPMS programs recognize and bring into clear focus the challenges of today and the great need for enlightened leadership, personalized to the individual and the situation, and balanced by professionalism and confidence for *all leaders* regardless of rank or position.

On-the-job training is not only appropriate but mandatory for many tasks, and certainly there are many fine soldiers in the Army today doing an outstanding job who learned most of their professional skills by applying themselves on the job and gaining knowledge from their experiences. All too often this has been the only way to learn because there have been insufficient Army or civilian schools that taught the skills required. The Army now realizes, however, the need for progressive and continuing formal education of its career enlisted men.

The ever-increasing complexity of equipment and management structures, as well as the unique leadership problems inherent in an all volunteer Army, make the process of continuing education an absolute necessity. It must also be recognized that not only is professional military education, important, but your civilian education is equally important. The Army wants and needs well-rounded men. This is demonstrated by Army policy that requires a high school diploma or equivalent for promotions beyond the grade of E-5.

Who goes to NCOES?

To attend the Basic Course, you must be a member of the Active Army or of a Reserve component in grade E-4 or E-5, have an MOS evaluation score of 100 or more as it appears on the Enlisted Evaluation Data Report (waiver available) *in* the most recent MOS evaluation, and have been selected by your unit commander and higher commanders as applicable.

To attend the Advanced Course, you must be selected by DA. For every one NCO selected, two

qualified NCOs were not! (There are not enough allocations for the Advanced Course to accommodate all of the qualified people.) Are you the best qualified in your Career Management Field?

Ninety percent (90%) of the Basic Course students will come directly from their parent unit and return upon completion. Ten percent (10%) will be those students in transit, who will continue on to assignment upon completion. Seventy-five percent (75%) of all students selected for ENCOA will come from their parent CONUS unit and return to the same unit. The other twenty-five percent (25%) will attend enroute during a permanent change of station (PCS). All students are in a TDY status and not eligible for family travel to the school.

What They Learn

To accommodate all Engineer Career Management Fields and MOSs, the Engineer School has developed a course concept which is quite flexible and applies to both Basic and Advanced Courses. Each course is divided into four (4) phases — Phase I has a common time span and is that portion of each course that is applicable to all career fields. Phase II is the portion of each course devoted to specific career fields where subjects applicable to a specific career are presented. Phase III is that portion devoted to MOS specialization and instruction is aimed at increasing the skill level within the target MOS. Phase IV consists of specialized group and individual projects where the student will put to practical use the knowledge and skills gained during the preceding weeks of instruction. For example, in the Basic Course, for the 12 series career field, Phase I consists of a general curriculum to include leadership, supply and maintenance procedures and material applicable to any MOS and career field. Phase II concentrates on combat engineering tasks to include equipment utilization, job management, tactical bridging, reconnaissance, construction operations, demolitions, and mine warfare. During this phase of instruction, students will receive cross-training of familiarity training within their Career Management Fields. Instruction in Phase III is MOS oriented, and for the 12B it might include advance techniques in camouflage, expedient methods of employing obstacles, rigging, field fortifications, demolitions, mine and countermine warfare, and other instruction unique to this MOS. Phase IV provides follow-up practical application of all the above instruction, utilizing individual and/or group study projects. For the 12B in Phase IV, a student might be given an introduction and mission to develop a target folder for the demolition of existing sample bridges; or to develop Barrier Plans with overlays for selected locations.

Phases II, III and IV all have variable lengths. The lengths of each are established according to the needs of the career groupings and MOS's and in line with the imaginative ideas that can be implemented for effective development training during Phase IV. The emphasis is on practical application and exercise of the student's initiative. One of the objectives of the Engineer School is to make all phases of instruction challenging and satisfying to the students.

In today's Army, with troop strength declining, the promotions and best assignments are going to be the reward of the man best qualified to do the job. Attendance at the Engineer Noncommissioned Officer Basic and/or Advanced Course will give you an opportunity to increase your professional skill, leadership, knowledge, confidence, and motivation.

SFC William D. Johnson is the Curriculum Manager for the NCO Basic and Advanced Courses, Resident Training Management Division, US Army Engineer School. He has served as an instructor at Fort Leonard Wood, Missouri, and the Combat Engineer Noncommissioned Officers Course (CENCO) in Germany. SFC Johnson served as a platoon sergeant and first sergeant with D Company, 299th Engineer Battalion (Combat) and is one of the very few enlisted men to command a combat engineer company in combat. He is a graduate of the Engineer NCO Advanced Course. His last tour of duty was as an Army Recruiter in Salem, Oregon.

LTC Howard J. Guba

A Helping Hands Story

As a result of mutual agreements between local communities and the US Army Infantry Center (USAIC), Ft. Benning, Ga., several significant community assistance projects have been undertaken by the 43d Engineer Battalion (Const). These projects have been accomplished in diverse communities in both Alabama—Cordova, Alexander City and Phenix City; and Georgia—Hamilton, Dalton and Columbus. Projects have included ball field complexes with ancillary buildings, extinguishing a major land fill fire, parks, roads and land clearing, and a major road complex with complete drainage facilities. The community assistance program is carefully monitored by the 36th Engineer Group (Combat) and the USAIC to insure that each project meets the following criteria:

- Sponsored by a non-profit organization for community benefit.
- No objection from local contractors.
- Materials and fuel are provided by the community.

Projects are evaluated from the viewpoint of overall training value for the 43d Engineer Battalion (Const), community impact, and support of the recruiting program. Projects that best meet the above criteria are selected. One of the most significant community assistance project undertaken by the 43d Engr Bn (Const) is the Chattahoochee Valley Community College (CVCC) road project. This project, located at Phenix City, Al., will provide the required access road for a tract of land recently donated to the college. The scope of the project is listed in Table I. The overall project can be divided into the following phases:

- Clearing and grubbing
- Drainage
- Sub base construction
- Base course
- Curb and gutter

Initial effort began in August 1974 with clearing and grubbing operations. The project,

TABLE I

Total	Unit	Description
2	Acres	Clearing & grubbing, beyond R.O.W.
24,459	Cu. Yds.	Unclassified excavation
820	Cu. Yds.	Channel Excavation
203	Cu. Yds.	Foundation backfill, local material
1,224	Cu. Yds.	Unclassified culvert excavation
11,550	Cu. Yds.-in place	Granular soil base, class 1, type B
2,500	Ton-in place	Aggregate for base, class 3, and 5 roadmixed
213	Lin. Ft.	18" concrete pipe
275	Lin. Ft.	15" concrete pipe
129	Lin. Ft.	24" concrete pipe
480	Lin. Ft.	24" concrete pipe
198	Lin. Ft.	30" concrete pipe
96	Lin. Ft.	48" concrete pipe
2,000	Lin. Ft.	6" concrete s.p. underdrain
54	Lin. Ft.	Double 8' x 8' reinforced concre
Curb and Gutter Lin. Ft.		13,675
Man holes ea.		20

NITY ASSISTANCE PROJECTS

which is 6460 feet long, was divided into segments. Responsibility for this was assigned to two companies. The earth moving platoons of both companies were almost continuously involved in construction, with only occasional excursions to high priority installation support and quarterly field training exercises. Inexperienced equipment operators rapidly learned the capability of their machines and improved their job performance through the day-to-day construction operations. The vertical platoons were involved in culvert construction which included a major cast in place double 8' x 8' x 54' reinforced concrete culvert.

Extensive framework was required, giving the carpenters valuable experience for future projects. The drainage plans included curb and gutters with brick drop inlets. The drop inlets provided valuable experience for the masons and also served as a proving ground for several Stripes-for-Skill mason personnel.

The presence of a swamp adjacent to the major culvert and several artesian springs located in a storm drain bed provided unique challenges to the platoon leaders and NCOs. To deal with the swamp, a coarse sand filter was sealed and the overburden placed. The desired stability was achieved and construction proceeded. Final paving was held over until major construction of college buuildings was completed, thus allowing consolidation to continue and ultimately precluding differential settlement of the paved surface.

The artesian springs were discovered after excavation for a 30" storm drain. After placing a coarse sand bed, the pipe was installled and the excavation was backfillled with a coarse sand filter draining to daylight in a ditch. Hydrostatic forces developed by the artesian springs were thus dissipated without damage to the culvert.

An added drainage feature was the provision of perforated pipe in cut areas to relieve hydrostatics forces and prevent infiltration of water into the sub base. Since the sub base was clay, addition of moisture above optimum moisture content would cause reduced structural strength. Protected by the perforated pipe, cut areas will retain design strength and differential settlement will be prevented.

Construction of the CVCC road provided excellent exercise for the earthmoving platoons, including the entire earthmoving train—dozers, tractor scrapers, water distributors, compactors and graders. In addition, carpenters, masons, and all members of the vertical platoons participated in drainage construction. Surveyors, soils specialists, and construction inspectors from Headquarters Company were involved. The training benefit to the battalion was incalculable. The project was built according to State specifications and was inspected by Russell County highway department personnel. Engineers of the 43d Engineer Battalion (Const) participated in a valuable training exercise enhancing MOS skills; Phenix City obtained an access road, and the Army received favorable media coverage in both newspapers and local TV.

An intangible benefit is the overall favorable publicity of the project and its impact upon the units recruiting program. community involvement by engineer units benefits both the units and civilian communities, and provides a viable alternative to reduced budgets for training materials and fuels.

Lieutenant Colonel Howard J. Guba is currently Chief, Plans and Topographic Branch, Field Engineering Division, Office, Chief of Engineers. He holds a MCE degree from Texas A&M University and an MS (Engineer Management) from the University of Alaska. He is a graduate of the Engineer Officers Advanced Course and the Command and General Staff College. His previous assignments include, Instructor, US Naval Explosive Ordance Disposal School, Indian Head, Maryland; Assistanct to Resident Engineer/Project Engineer, US Army Engineer District, Alaska; Staff Officer, Combat Developments command; Chief, Operations Branch, Lines of Communication Division, Construction Directorate, HQ MACV, Vietnam; and Commander, 43d Engr Bn (Const), Ft. Benning, Georgia.

INTERSERVICE TRAINING FOR EQUIPMENT OPERATORS

CPT Robert A. Formo

On 6 January 1975, a new Interservice Training Program was begun at Fort Leonard Wood, Missouri, for Construction Equipment Operators of the Army, Marine Corps and Air Force.

In developing this training program, particularly for the Army, a major change was made in the concept and organization of training. Course length, form and to some extent skills taught in each MOS were amended. In most cases, the courses have been shortened and provision has been made for more concentrated hands-on training. Two important considerations pervaded the new training program:

- provide the field an equipment operator who can operate more than one piece of equipment; and
- provide only that training which will be beneficial during the first enlistment term.

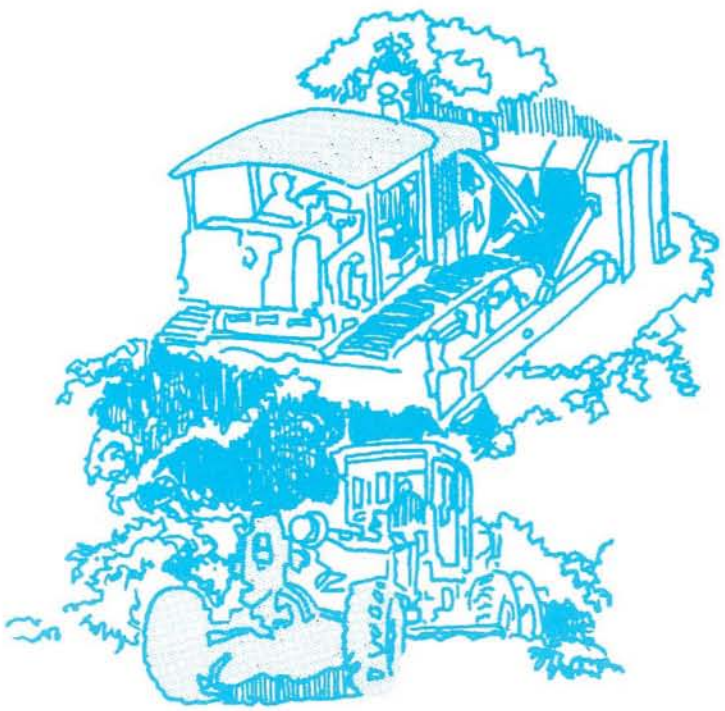
The above considerations serve to reduce the overall length of training, particularly when coupled with the current shift in emphasis toward performance training and criterion tests. For example, the old seven week Crane Operator's Course (62F20), has been replaced by three modules in the Interservice Training Course. The modules consist of:

- a one week common core of fundamental subjects and vehicle operations in which a trainee learns to operate a 5-ton truck;
- a two week module in which the trainee learns to operate the crawler as a prime mover; and
- a two week module in which the trainee learns to operate a crane.

Although the overall training period was shortened, it it significant to note that there is no reduced standard — the trainee must still pass the required performance tests to graduate. Some believe that substitution of a shorter, multi-skill oriented course will produce a lesser skilled soldier than the old seven week single skill course. But considering the amount of hands-on training f army equipment operators is at least double that which was provided during the seven week courses, the revised courses are at least as effective in providing basic operator skills as were the old courses.

This new training program provides the field an apprentice, capable of operating several varieties of equipment with job direction provided by a non-commissioned officer or another job supervisor.

In conclusion, the Interservice Training Program for Construction Equipment Operators seeks to provide a soldier with those basic skills and competencies which can be readily built on with experience and practical work within the context of his unit.



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Measure of Effectiveness

Mark G. Pell

In the past, it was an accepted military maxim that the winning General was the one who "got there first with the most." Today, opposing commanders have available rapid means of communications and control, the capability for remote surveillance and rapid transmission of intelligence, and almost instantaneous response of the application of firepower and maneuver by weapons which can achieve an extremely high first hit/kill probability.

Today the question being asked more and more frequently is: "What are the key factors which influence success on the battlefield and *how much* do these factors contribute?"

As Army Engineers, we have enjoyed the confidence of our combat commanders in our ability to contribute to the success of combat units. Typical Engineer tasks in the Division area include erecting tactical bridges, assault breaching of fortified positions, executing demolitions, cratering, employment of Atomic Demolitions Munitions (ADM), improvement of defensive positions, clearing fields of fire and landing zones, and improvement of routes.

Now we are being asked "How much does each combat and combat support task contribute to the success of the battle?" This "show me" attitude should be expected when Army strength is being reduced, and civil programs of the government are competing with defense programs for a greater share of the national budget.

In order to develop an approach which will answer these questions, it is necessary first to establish "Measures of Effectiveness" by which results are evaluated quantitatively and allows the decision maker to make his selection relatively easily. For example, if a person were buying a car today and his primary criterion were fuel economy, a suitable "Measure of Effectiveness" (MOE) would be "Miles Per Gallon of Gasoline." This measure would make the selection of a new car simple. In combat, one of the accepted MOE is "Number of RED casualties." Another is the "Number of BLUE casualties." Taken together these two MOE result in a RED/BLUE casualty ratio, which is generally accepted as a measure of the results of combat.

If we, as decision makers, were buying a new weapon system and our criterion of choice were the destruction of the enemy, "numbers of casualties" produced by the weapon system would be a suitable MOE for judging the effectiveness of the weapon. It could also be readily relatable to the

MOE used for judging the results of the combat unit, since the two MOEs are identical. In this case, the decision makers would probably select those weapon systems which produced the greatest number of casualties.

If we, as decision makers, were buying a new piece of Engineer equipment used by Combat Engineers, for example, a new type of tactical bridge, the number of casualties is *not* the most suitable MOE for judging the effectiveness of the new bridge. Instead, our criteria of choice might consist of several considerations. First, the bridge must be capable of being completely constructed. This is a Go/NoGo type criteria. Obviously, if a bridge has a capability of spanning a gap up to 50 feet and the bridging requirement is 65 feet, this is a "No Go." In this case, the mission cannot be accomplished with that type of bridge. The second criterion might be erection time for the bridge, possibly expressed in "number of feet per minute" which can be erected. Using such methods, one type of bridge can be compared with other types of bridges. This MOE will serve the purpose of quantifying the effectiveness of the new bridge when compared with other types of Engineer equipment already in the inventory. However, we have not yet established the effect of this increased capability for bridging on the outcome of the battle, which as indicated earlier, is measured by numbers of casualties.

Given the above, we can now state the problem as follows: "How can we relate improved Engineer performance measured by "time to complete a task" to the outcome of the "First Battle" measured by "RED/BLUE casualty ratio?" Quantifying this type of indirect relationship between combat support functions and the outcome of battles has been the subject of numerous study efforts and attempts to simulate these relationships. For example, for large units, i.e., Theater Forces, some success has been achieved, but the factors employed make it difficult to focus on specific support systems or equipment. For example, The Engineer Studies Group has used the Conceptual Army in the Field (CONAF) Evaluation Model (CEM) to reflect changes in the Engineer forces provided to a commander. Reduction of Engineer forces in this model increases the time required to accomplish combat engineer functions, which in turn, affects the movement rates of the force, which in turn, affects the location of the Forward Edge of the Battle Area (FEBA). This study effort is extremely useful for Army planners in developing balanced forces to support contingency plans. It would be helpful in answering the question recently posed by the Commander of the US Army Logistics Center, Fort Lee, Virginia as to the quantitative measure of the value of logistics support to a force or a combat unit. However, it is inadequate in helping the decision maker decide which piece of equipment to buy in order to produce the maximum increase in combat effectiveness.

Several other organizations have completed, or are in the process of performing, related studies which may assist in solving the problem stated above.

The Mobility Equipment Research and Development Center (MERDC) developed a model to attempt to relate the creation of delay due to obstacles to the outcome of a battle. The MERDC effort is entitled the "MERDC Barrier Effectiveness Model." This model does not completely solve the problem stated earlier.

Another related effort, produced for MERDC, demonstrated a method for evaluating the "Military Worth of Countersurveillance Systems." This effort draws heavily on the methodology used in the "MERDC Barrier Effectiveness Model."

The Commander, US Army Training and Doctrine Command, recently tasked the US Army Engineer School (USAES) (and other service schools) to make an analysis which would result in producing quantitative measures of how increased effectiveness will yield returns on the battlefield.

The Engineer School is currently analyzing this important problem. Since increased effectiveness of training is presumed to produce improved Engineer performance measured by time to complete a task, a way must be found to relate this to the outcome of the "First Battle" measured by RED/BLUE casualty ratio.

The Engineer School is attempting to develop a methodology which would produce evidence of this indirect relationship between Engineer task MOE and battlefield MOE and to quantify the results. The USAES is constantly learning from each of the efforts described above.

The steps in the Engineer School's methodology are envisioned as follows:

• For a specific Engineer task, establish parameters representing high, normal, and low performance times to accomplish the task.

• Conduct sensitivity analysis:

- Playing each performance time in a suitable battle scenario using the high, normal, and low performance times as variables.

- Measure results by using casualty MOE for the combat unit being supported.

- Plot curves representing the MOE casualties when the high, normal and low performance variables were played.

* If the curve is flat, the analysis indicates that changes in the effectiveness with which Engineers perform their combat support task have no identifiable effect on the outcome of the battle.

* If the curve is steep, the analysis indicates that changes in the effectiveness with which Engineers perform their combat support have influenced the outcome of the battle measured by increased casualties. The changes in the casualty MOE serves to quantify how much battlefield effectiveness is improved by changes in the effectiveness of the Engineer support.

- Repeat this procedure for other Engineer tasks.

- Identify for further study or analysis each Engineer task which produces a steep curve since improvement in the performance of these tasks may produce a high payoff in terms of combat effectiveness.

In order to employ this methodology, a model is needed which will be capable of:

• Playing ground combat of a maneuver unit of battalion or brigade size and measuring results by number of casualties.

• Playing the performance of Engineer combat support tasks such as those described as typical in a Division area and being capable of varying the performance times for the tasks.

• Relating the performance times of the variables in the model to ultimate results of the battle as measured by the output in terms of casualties.

The USAES knows of no model which can currently perform in this manner without modification.

The US Army Engineer School project described above has been programmed for the next 18 months. It is now investigating possible models to be used for the analysis. Initial plans envision the use of the Mobile Assault Bridge as one of the Engineer tasks to be analyzed. This is also being used as one of the Engineer School pieces of equipment to be analyzed in the Training Effectiveness Project directed by HQ, TRADOC. In this way, the two related efforts can go on concurrently, which will allow the data and results to be used mutually.

If this approach proves successful, it will have wide application in quantifying many aspects of Army operations which indirectly effect the outcome of the "The First Battle."

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NEW TOOLS FOR OLD TASKS

Major William H. Sprinsky

Surveying, the act of making measurements for determining the positions of points on, above, or beneath the earth's surface, is a venerable trade whose practitioners span all geographic, ethnic and professional boundaries. The U.S. Army has been in the business of surveying almost from its birth. Today, all the services have need of survey information to accomplish their respective missions. This survey information spans the entire spectrum from road plan and profile construction survey to the computation of distances and azimuths between points separated by half the distance around the earth in support of strategic weapons systems.

The Defense Mapping School (DMS), located at Fort Belvoir, Va., has the mission of training the Military Service personnel who perform these missions for all of DoD. Techniques and equipment taught are those standard to service practice, but differ very little from standard civilian land surveying. The faculty of the school is a mix of military and civilian instructors who, by the nature of their experience, are very well acquainted with developments in surveying instruments in the civilian sector. In an attempt to modernize military survey equipment, these instructors are actively engaged in a program of equipment testing and evaluation, in cooperation with the U.S. Army Mobility Equipment Research and Development Center (MERDC) and the United States Army Engineer School (USAES) via the concept evaluation program of TRADOC.

Survey equipment, which has been marketed and proven in private surveying practice, is examined for service standardization. The equipment is adopted not because it is new, but it must help the military surveyor do his job faster, more accurately (in keeping with the ultimate use of his measurements) and must be rugged enough to function in a hostile military environment. The new equipment must also take advantage of the educational strengths of our present day soldier.

In the main, surveying equipment measures one of the following quantities:

- directions or angles (these terms are not synonymous)
- distance between two points
- azimuths

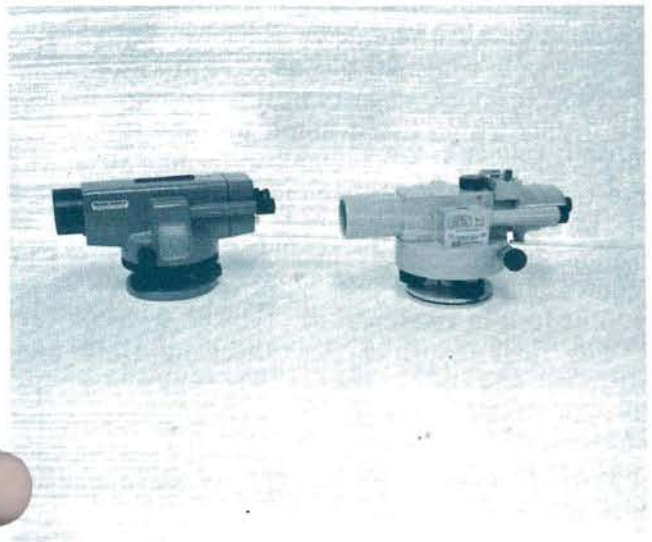
A distinction will be made here between plane and geodetic surveying equipment. The assumption in plane surveying is that the level of the undisturbed oceans (mean sea level), carried under the land mass we occupy, can be approximated by a plane. All positions would then be located above, on or below this plane. This is correct only for small areas and so plane surveying techniques are used most commonly in construction of roads, airfields and buildings, registration of small parcels of land, and city (cadastral) surveys. Geodetic Surveying recognizes that, over large areas, the level of the undisturbed oceans, extended under the land masses of the earth, is curved (that is, the earth itself is rounded). Geodetic Surveys are usually much more precise (and costly) than plane surveys and are used to establish national networks of control and for support of strategic weapons systems.

In the field of plane surveys, due to tremendous improvements in electronics and optics over the last ten years, many new and improved distance measuring machines have been marketed. Those which MERDC evaluated were short range devices using the wavelength of a frequency of infra-red light to determine distance. The DMS tested the instruments by having instructors and students perform many measurements with each model considered, to assure that manufacturer's claims were accurate, that soldiers in the field could use them for military surveys and, in normal military use, that they were reliable. Although they are to replace the standard 50 ft and 100 ft tapes, which cost a fraction of the infra-red devices, the speed with which measurements can be made on lines up to 1.6 Km will significantly improve the capability of survey sections which

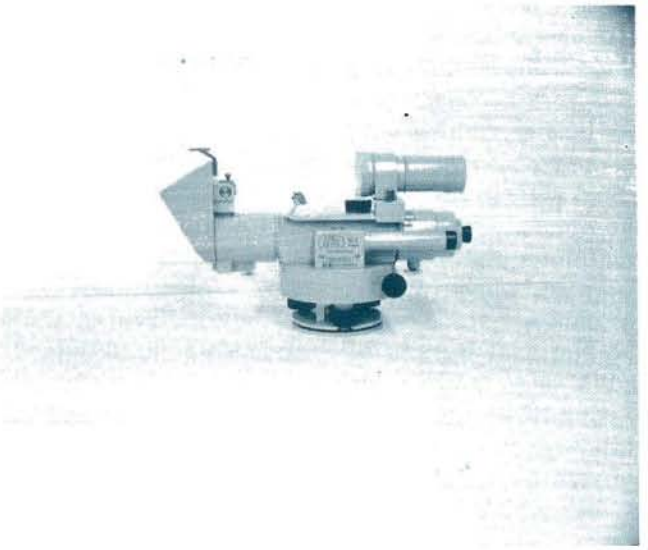
are part of units engaged in horizontal and vertical construction. The accuracy of the distance obtained are probably up to a magnitude better than those resulting from taping procedures, particularly on longer lines.

Another device evaluated by DMS is the "self-leveling" level which could replace the dumpy and military levels, if adopted. These self levelers use a suspended prism to establish the horizon. Rather than the complicated 4 foot screw leveling procedure common to the older instruments, a single "bulls-eye" bubble only needs to be aligned, the prism and suspension system take care of the rest. If you have ever done any spirit leveling or watched even an experienced spirit leveling crew, you can appreciate the time savings this represents.

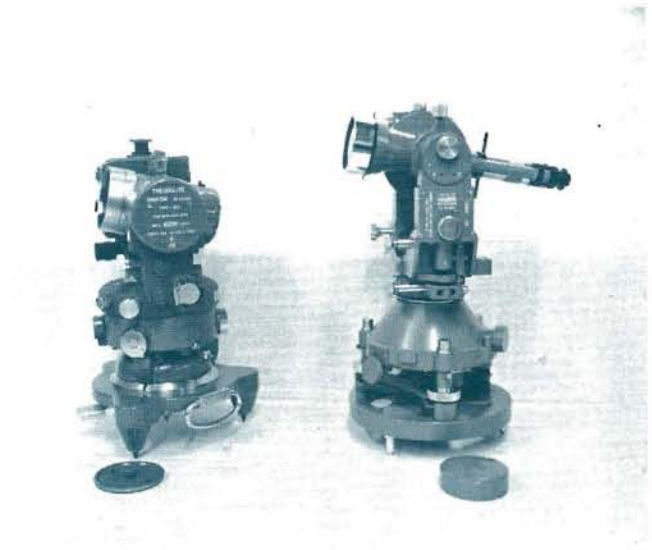
For the geodetic surveyor, a basic change in his precise theodolite, the Wild T-3, accurate to a fraction of a second of arc. It has been standard in precise horizontal positioning projects for over twenty years, but will be replaced by the Kern DKM 3. This new instrument is capable of the same accuracy but is more compact in its transportation configuration. Geodetic surveyors will also be able to use the new infra-red distance measurers previously described and DMS will be evaluating laser distance measurers for long range, precise



SELF LEVELING LEVELS, WHICH WILL BE USED IN CONSTRUCTION AND PRECISE LEVELING. RIGHT IS THE WILD NAC 3 AND LEFT IS THE ZEISS NI-2.



THE ZEISS NI-2 WITH ASTROLABE ATTACHMENT. THIS WILL BE EVALUATED AS A PRECISE ASTRONOMIC POSITION DETERMINING DEVICE BY DMS.



THE NEW SERVICE STANDARD PRECISE THEODOLITE, THE DKM 3 (LEFT) AND THE T3 (RIGHT). NOTE THAT THE T3 IS A STANDARD REFRACTING TELESCOPE WHILE THE DKM 3 IS A COMBINATION REFLECTING-REFRACTING TELESCOPE DEVICE.

THE CUBIC DM20, A MICROWAVE DISTANCE MEASURING DEVICE (LEFT). A BATTERY DRIVEN PSYCHROMETER (WET & DRY AIR TEMPERATURE MEASURER) AND POCKET BAROMETER (RIGHT) ARE PART OF THE COMPLETE SYSTEM.

point to point distances. Concurrently, and still on the subject of distance measuring devices, DMS will be testing and evaluating Microwave devices as replacements for the MRA 301, MC 8 and AP 99 now standard in survey units.

As mentioned previously, new is not necessarily better. One of the oldest astronomic positioning devices is the 60° Astrolabe. In its crudest form, this device predates the sextant. More refined astrolabe devices are used in most observatories engaged in the study of polar motion and time. A new astrolabe attachment for the same self-leveling levels mentioned previously will be evaluated at DMS. Many authorities in the field of positional or geodetic astronomy feel that this astrolabe-self-leveling level combination has the potential of being as accurate as instruments presently used by the services which are far more costly and cumbersome.

Any surveyor involved with astronomic positional measurements is intimately associated with the accurate measurement of time. Originally this was done with special pendulum clocks. More recently, we have used accurate electro-mechanical chronometers which are then calibrated with the National Bureau of Standards time standard, WWV or WWVH, which are radio stations broadcasting time signals. We now have as service standard a time set incorporating the latest in "quartz clock" oscillators and WWV/WWVH receivers which automatically record the exact time of an event observed with our special, high precision astronomic theodolites.

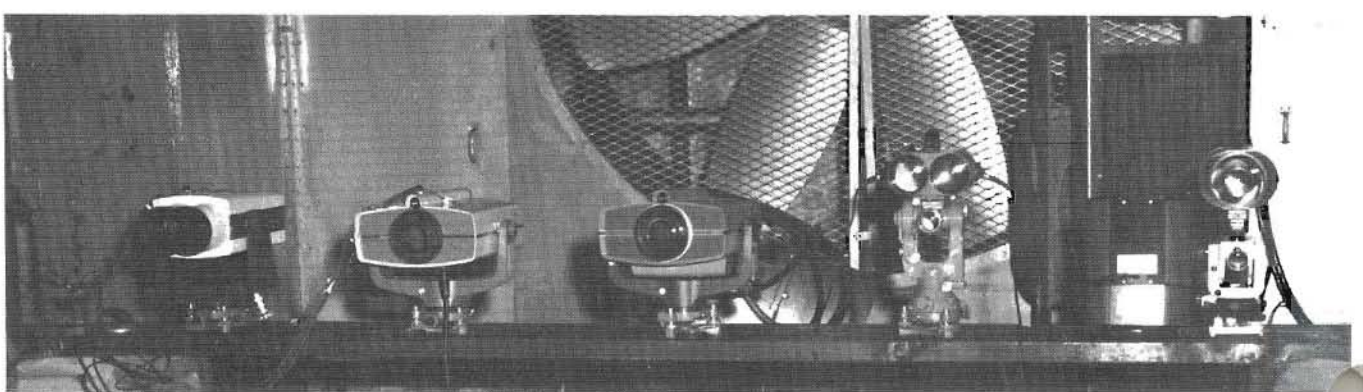
All the new equipment discussed would represent a real headache if data reduction from observations, now made quicker and easier, were to be done in the traditional way, that is by hand with logarithms. Our new soldiers have already been exposed, in public schools, to small, portable electronic hand calculators. A new development in the entire survey field is the adoption of scientific hand calculators into service standard survey sets. These devices are being used and taught in DMS courses and the rapidity with which field data is being reduced may surprise and please all users of survey information, from the strategic missile ma[n] to the construction foreman on a road job. DMS [is] now redesigning courses of instruction, procedures, and methods of computation to take advantage of this strength in the modern soldier and improvement in the electronic calculator.

The future for the surveyor may be even more promising than what has already been experienced. Commercial applications of the Navy Navigation Satellite System hold great promise for fast, accurate point positioning. The testing and standardization of inertial positioning systems, mounted on all wheel drive vehicles, continues to be an area in which all the services are interested.

DMS technical experts in this field are part of the evaluation so that when a finished product is finally adopted, it will match serviceman strengths and capabilities. DMS technical experts may also be investigating commercially available digital readout transits and theodolites, which would remove much of the possibility of observer error or blunders in readings.

The final result of this effort by DMS and MERDC will be a survey capability for the services which is as modern and efficient as its commercial counterpart. The final result for the military surveyor will be that he is taught o[n] modern, precise equipment and has a trade which he can persue either in the service or in civilian practice.

Major William H. Sprinsky has received his MS and PhD in Geodesy from Ohio State University. He served as a Combat engineer and Engineer Maintenance officer in Germany from 1960-1964. MAJ Sprinsky served as an Engineer Equipment and Engineer Maintenance Officer in Vietnam



INFRA-RED DISTANCE MEASURING DEVICES IN A MERDC CONTROLLED ENVIRONMENT CHAMBER. FROM LEFT [TO] RIGHT, THE CUBIC DM 60, HEWLETT-PACKARD 3800, HEWLETT-PACKARD 3805, WILD DI10 MOUNTED ON A THEODOLITE AND K&E MICRO-RANGER MOUNTED ON A LEVEL.

ARMY TRAINING GOES MODERN

Stanley Georges

For those constructively involved in education, current developments in the field of military training are proving to be revolutionary. In recent years, no educational concept has raised more discussion in the Army than the Training Extension courses (TEC).

Basically, TEC was developed by the Army, as a response to help soldiers in 3 vital areas. These are: On-the-job training, MOS tests, and integrated and concurrent training.

The TEC program centers on prepackaged lessons that are multi-media, soldier tested, and with both pre- and post-test features that can be used by individuals and units. TEC's features permit self-pacing and enable the user to perform goals directly related to an MOS and to perform on-the-job skills.

TEC incorporates two innovations that are of special interest:

- *Audiovisual lessons:* These are packaged with an audio cassette and a closed-loop color filmstrip that is synchronized through a "Cue-See," TV-like machine. The student learns from the color film and a "down-to-earth" narration.
- *Audio casette player:* The cassettes, which provide audio only, are used as an extension to the audiovisual lessons to guide the student in "hands-on" practice for the equipment oriented skills that he learns from the "Cue-See."

Results from actual soldier-test situations indicate that the audiovisual lessons are stimulating, provocative and most effective as a teaching mode. In this context, it is significant to note that the Combat Arms have successfully adopted this training program over the last year. At present, the US Army Engineer School is preparing 14 generator operator TEC lessons that are scheduled to be in the field by December 1975 and is developing 15 diesel engine troubleshooting lessons that will be completed during the next calendar year. Futhermore, reports from the field indicate that by the beginning of next year most military service schools will be involved in preparing TEC lessons.

Although TEC is not considered the "cathedral" of training modes, it has implications far beyond mere pedagogy. For instance:

- TEC training materials are designed to emphasize peformance rather than mere theory, which was emphasized in previous methods of instruction. In other words, the emphasis is on what the soldier will do as a result of the training. Empirical methods are employed and validate the instruction.
- Unit commanders and trainers can easily use TEC diagnostic testing and evaluating to determine strengths and weaknesses in the job proficiency of individual soldiers.
- Training within units is enhanced because TEC provides trainers with high quality instruction in a ready-to-use form that reduces the need for unit trainers to develop lesson plans, visit training aids center, audiovisual support centers, post photo labs, or other agencies to obtain materials to support training. As a result, trainers can act more as evaluators — to test the student as he finishes his training, or as designers for new TEC lessons.

Finally, the innovative features of the TEC program overcome the traditional shortcomings of most courses of instruction — a one-way flow of instruction from Army service schools to individual soldiers at the unit level. By using high quality multi-media methods, the program focuses on the benefits of applying training technology to Army training. In doing so, it emphasizes the necessity of soldier performance, not instructor performmance.

Details for the distrubution of TEC lessons to Engineer units have not yet been finalized. However, according to tentative schedules, Engineer Combat Support and Combat Service Support units will begin to receive both the software (lessons) and hardware (Cue-See sets) in fiscal year 1976. The software will consist of common Army and Engineer subjects. The hardware will consist of eight sets of audiovisual equipment (Cue-See) and four sets of audio (cassette player) equipment per battalion.

Mr. Stanley Georges is assigned to the Doctrine and Training Literature Division, Deputy Commandant for Combat and Training Developments, U.S. Army Engineer School, Ft. Belvoir, Va. Mr. Georges has been with the above division since 1966 and is currently a TEC Project Manager. He is a retired Army Engineer Officer and has taught at the Enginer School both as an officer and as a civilian. He holds a Masters degree from the University of Maryland.

1000 GOOD B

CPT Stephen P. Meyer

The United States Army Engineer School (USAES) has been in the forefront of TRADOC's development of dynamic initiatives in the field of training literature.

In November 1974, TRADOC announced the "1000 Good Books" program. This reorganization and vitalization of training literature has the objective of disseminating the Army's vital information to troops, while taking "nice-to-know" or specialized matters out of Army-wide use and placing such information in special texts for their selected audiences. Basically, the program is aimed at reducing the quantity of manuals while improving their quality, i.e., TRADOC will reduce the present 1700 manuals to the goal of 1000. The USAES's contribution to this reduction will be from 188 to 123 titles.

A key element of the program is the "How to Fight" manuals. Lessons learned from recent conflicts about the effectiveness of modern armaments and the increased difficulty of survival on the modern battlefield indicate that the tactics described in current manuals are no longer adequate or applicable. The "How to Fight" manuals will use the analyses of these "learned lessons" and capabilities of present day weapons to outline what must be done to win the first battle of the next war. The USAES's contribution to these manuals will cover the employment of the di-

visional and nondivisional engineer battalions. These are discussed in:

- FM 5-135 Engineer Battalion, Armored, Infantry and Infantry (Mechanized) Divisions.
- FM 5-136 Engineer Battalion, Airborne and Airmobile Divisions.
- FM 5-142 Nondivisional Engineer Combat Units.

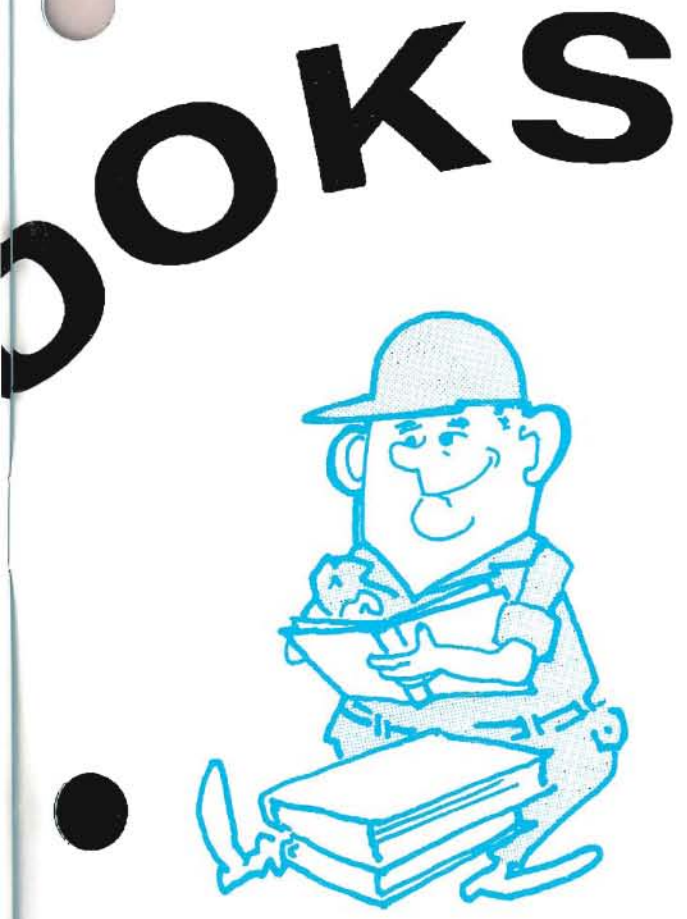
The revised manuals will describe the four engineer roles in support of offensive, defensive, and retrograde operations:

- Impede enemy mobility.
- Enhance friendly mobility.
- Provide protective and defensive shelter.
- Fight as Infantry.

The USAES has also assumed responsibility for literature on "Barrier and Denial Operations" (FM 31-10) and will produce a "How to Fight" manual on this topic.

An important element of the "1000 Good Books" program are the TRADOC Bulletins. These are brief volumes — about 30 pages — which provide timely technical information to the field and explain, 'why we fight the way we do'. The USAES is currently writing two bulletins for TRADOC — Camouflage and Barriers.

Technical manuals which presently contain narrow slices of the "information pie," such as TM 5-350 — Hydraulic Power Control Systems, or TM 5-545 — Geology, will disappear under the "1000 Good Books" program. Their contents will be diverted to several locations. The material will be available either in the unit (civilian) book set, or a school text, or a soldiers manual — (a new one stop guide for each particular MOS).



The USAES has already produced its version of the soldiers manual as a prototype Individual Training and Evaluation Program (ITEP). This serves as an information "road map" with respect to a soldier's needs for proficiency in his MOS. Individual tasks, conditions, and standards are prescribed in accordance with the Systems Engineering approach to training.

Following the same principle at the unit level, the Army Training and Evaluation Program (ARTEP) is being produced to replace the old Army Training Program and Army Training Test (ATP/ATT). The ARTEP lists those tasks the unit must be able to perform in order to successfully accomplish its mission. The ARTEP provides guidance to units on how they should:

- conduct their training,
- administer their annual tests, and
- evaluate (training REDCON) their level of readiness.

The above three areas are based on unit tasks, conditions and standards.

The Training Circular (TC) has also been revitalized and now serves as a means to get "perishable" information to the field in a hurry. The USAES recently produced TC 5-200 (Camouflage Pattern Painting) — this explains to Army units the techniques of applying the new and improved camouflage paint they are receiving.

All the publications cited above have been changed not only in purpose but also in format. Ample use of illustrations, lively layout, and imaginative typesetting make these books much more readable than their predecessors.

The oft-cited complaint that the field doesn't "believe anything unless it's in a tan-covered, standard printed FM or TM" is a truism. But, the complaint continues, "even if the information is there, it won't be read because it's too dry and dull." With the publication of the new books, such complaints will be laid to rest.

Captain Stephen P. Meyer, is currently Project Officer, Engineer School, Deputy Commandant for Combat and Training Developments. He holds a BS degree from Drexel University and a MS degree from Clemson University, both in chemical engineering. He is also a graduate of the Engineer Officer Advanced Course. He has served as company commander in both Germany and Vietnam, and was an ROTC instructor at Clemson University.

BRIDGING

RETENTION OF SELECTED CSM PAST 30 YEARS

For the third consecutive year, Department of the Army intends to retain selected Command Sergeants Major beyond 30 years active service.

Eligibility for consideration will be limited to CSMs who have completed 30 or more years' active service and have an ETS during FY 76. Applicants must have a 1974 PMOS Evaluation Score of 110 or higher and be able to complete 35 years service prior to reaching age 55.

TIME-IN-GRADE CHANGE FOR RETIREMENT

The requirement for Army members in grades E-7, E-8, E-9, CW3, CW4, O-5 and O-6 to serve a minimum of two years in grade before being eligible for nondisability retirement has been suspended until 30 June 76, DA has announced.

Individuals in those grades who have completed all their service obligations and who are otherwise eligible may apply for voluntary retirement between now and 30 June 76 providing they have completed six months active duty in that grade — effective from the date of their promotion.

Officers of the reserve components and the Army of the United States without component who are serving, or have been offered retention beyond 20 years' service as an exception of policy, will not be involuntarily released from active duty earlier as a result of this suspension.

Interested individuals should refer to the procedures contained in Chapter 4, AR 635-100 and Chapter 12, AR 635-200 for submitting applications for retirement.

ADVANCED NCOES SELECTION BOARD RESULTS

The Advanced Noncommissioned Officer Education System Selection Board which convened 19 Feb. 75 and adjourned 12 Mar., has selected 4,936 of 15,713 eligible senior NCOs to attend Advanced NCOES during FY 76. MILPERCEN announced the names of the selected individuals in May 75.

Individuals considered had to have at least a high school diploma or equivalent. The board also reviewed the eligible NCOs' overall performance ability and potential for future service in making final selections.

NCOs selected from oversea assignments may return to CONUS to attend the school TDY and return, provided they would have at least six months remaining of their oversea tour upon completion of the school. Those NCOs must also extend their oversea tours for at least one year in order to participate.

NEW OER UPDATE

If approved without revision during current staffing, the new Officer Evaluation Report (DA Form 76) that becomes effective 1 January 1976 will be a significant departure from past reports. The proposed major changes include the following:

- **Rated Officer Input:** Rated officers would be required to describe in detail their most significant duties and responsibilities executed during rating periods. They would also have to list the performance objectives that most accounted for their time. The proposed requirement for rated officer input is purposefully designed to promote a continual discussion — one which would begin at the outset and be carried on throughout an entire rating period — between the officer and rater to determine the job description, set performance objectives, and mutually plan in advance toward mission accomplishment.
- **Separate Rater/Indorser Input:** Rating and indorsing officers would provide separate evaluation information on the new form. Specifically, the rater would assess performance (how well the rated officer actually accomplished the tasks of the job), while the indorser would evaluate the officer's potential (how well the officer can be expected to execute the tasks of a job demanding higher rank and added responsibility).

THE GAP

• **Expanded Role for Reviewer:** In addition to the reviewer's current responsibilities in the rating chain, he, like the indorser, would be required to evaluate the rated officer's potential.

• **Descriptive Emphasis:** The new form describes rather than quantifies; thus the rater, indorser and reviewer would not enter numerical scores in their evaluations of the officer's overall performance or potential.

• **Tailored to OPMS:** The form has been designed to meet the future requirements of the Officer Personnel Management System (OPMS). Since each OPMS specialty has unique management requirements, the report would be flexible enough to allow for — or in some cases, require — the inclusion of specific performance and potential data needed by specialty managers. The rated officer would also be able to use a portion of the form to enter a preference for specialty designation or a future assignment in a primary or alternate OPMS specialty.

• **Close Out Reports:** Prior to the 1 January 1976 implementation date of the new form, a closeout report on current DA Form 67-7 would be required for all officers. If approved, this action would not only preclude much of the apprehension normally experienced by those officers who would otherwise be due ratings during early 1976; it would also synchronize the initial rater/rated officer discussions of performance objectives which are being proposed in conjunction with use of the new form.

Certain aspects of the present evaluation system would remain unchanged once the DA Form 76 becomes effective. For example, rated officers would continue to receive personal copies of completed reports; a single form would still be used to evaluate all active duty and reserve component warrant and commissioned officers through the grade of Major General; and the professional attributes would continue to be evaluated. In this latter instance, however, rated officers could expect to find that the new form would feature expanded format entries addressing **professional competence, individual self-discipline, leadership, professional ethics,** and **professional orientation.**

Despite these proposed innovations, the forthcoming OER is not designed as a panacea for all past problems associated with the history of the officer evaluation process. Instead, the DA Form 76 now being staffed is an evolutionary form which, if approved, will be the first step toward continuing improvements in evaluating officers.

MOVEM SUPPORTS MOVEMENT

Moving soldiers across the country and around the world effectively is a vital link in the Army's chain. To help facilitate accurate controls and eliminate empty seats flying overseas at the Army's expense, MILPERCEN has developed the Movement Oversea Verification of Enlisted Members (MOVEM) report.

Under the MOVEM concept, 30 to 45 days prior to a given arrival month overseas, port calls are matched against assignment information on the Enlisted Master File. DA approved deletions and deferments are then scratched from the report and soldiers specified by DA to move during that arrival month, but who do not have port calls, are identified. From this a more realistic picture of exactly who will make their port call and who won't becomes clear. The MOVEM report, indicating soldiers unlikely to meet their port calls, is then prepared and forwarded to major commanders requiring either movement or an explanation of any unauthorized deviations. In this way, new arrangements can be made to transport those soldiers to their new assignments, if necessary, or arrangements can be made for other soldiers, on stand-by status, to fill their seats.

Since its implementation early this year, MOVEM reports have been sent monthly to the affected commands. Comments on the report and suggested improvements were solicited and have been positive and useful. As the MOVEM program progresses, it will continue to provide effective verification of port calls for soldiers moving overseas and save the Army money by filling the seat of a "no show" with a soldier who needs the seat but normally wouldn't have the priority to have it.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