MOV

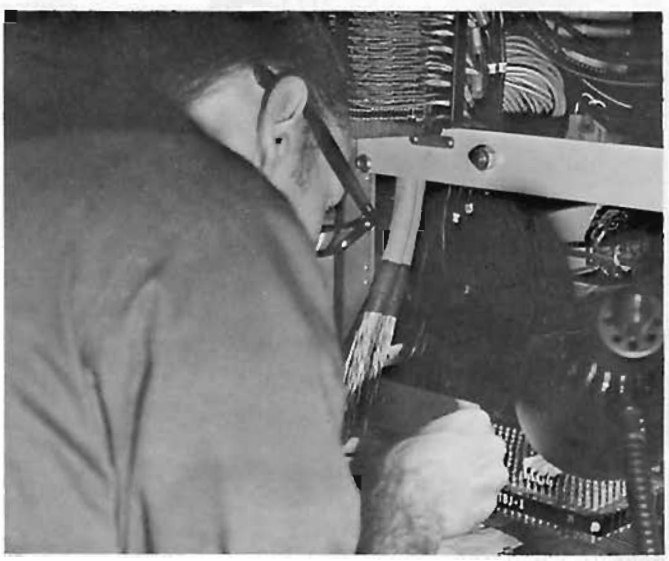
We in the military are accustomed to frequent moves, from a normal PCS to an "alert" involving units packing up everything and hastily deploying to the field.

But the current move of the U.S. Army Signal School from Fort Monmouth, NJ, to Fort Gordon, GA, has posed some special problems. These might be loosely compared with an individual being asked to move himself a similar distance, but also having to completely disassemble his TV and all other electronic devices and then reassemble them at the new station! However, in this case it is not sufficient that the TV set be simply dismantled and moved. Because the Signal School systems required for training are self-contained, it is necessary to also dismantle and move the transmitting station as well as the receiver set. How would that assignment grab you?

The whole thing began in March 1967 with a Department of the Army study on the feasibility of consolidating all Signal training. The choice of venue was Fort Gordon, GA, for its obvious advantages of size and climate, permitting year-round training and deployment of full-size communications units. In consideration of the feasibility and cost of consolidation, various cost estimates were made comparing such a move by contractor personnel, U.S. Army Communications-Electronics Engineering Installation Agency (USACEEIA) personnel, and in-house Signal School instructor assets formed into a special ad hoc team. Except for the most complex and sophisticated computer installations requiring contractor support, it was deemed feasible and cost effective to use organic military resources of the Signal School for most of the equipment involved. The ad hoc instructor group was initially conceived at 90 military and 10 civilians, representing engineering, drafting, installation, supply, and overhead personnel. In addition, some supplemental technical assistance from USACEEIA was arranged by a Memorandum of Understanding.

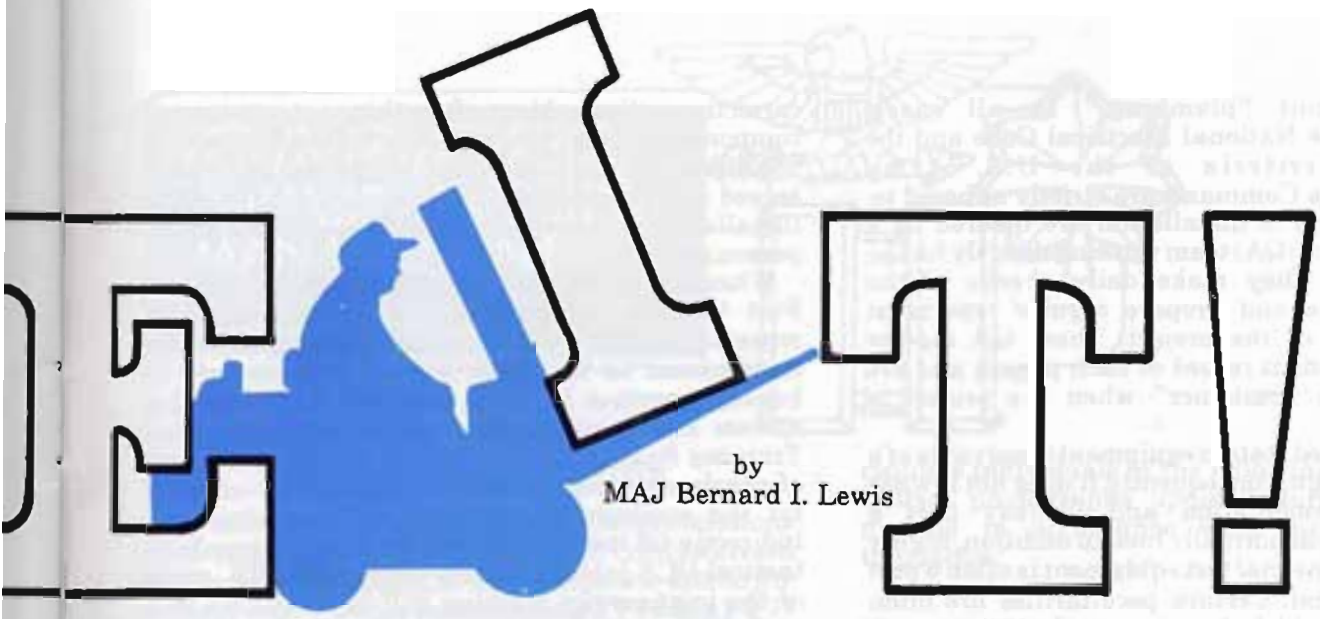
The original plan was to accomplish the move by sending the Fort Monmouth teams TDY to Fort Gordon, supplemented by the USACEEIA advisors TDY from Fort Huachuca. The estimated cost of this approach was $180,000. This was compared to a USACEEIA estimate of $1,057,000 for similar work, although this was not a direct comparison because the Signal School would obviously not bill itself separately for the instructor's salaries while it would be billed for such outside help contracted from CEEIA.

With the decision to implement the move using in-house assets, an ad hoc group was formed in December 1974 as a TDA organization of the Communications-Electronics School, Fort Monmouth, NJ. It was tagged with the acronym of EIPO ("eye-po"), which signified the Engineering and Installation Project Office. The EIPO temporary charter (to run through September 1976) called for reengineering the various equipment installations at



Fort Monmouth into configurations suitable for the Fort Gordon facility, and for the actual disassembly/reinstallation of the approximately 100 projects to be identified.

To support the planned installation efforts, some of the most highly motivated and skilled C-E School



by
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MOVING THE SIGNAL SCHOOL FROM FORT MONMOUTH TO FORT GORDON

instructor personnel were identified and assigned. Some of these instructors were sent to USACEEIA to learn the specific techniques of installation. They were then used to establish an OJT program at Fort Monmouth to train all other assigned installers.

The first installation projects began at Fort Gordon in January 1975 with two TDY installer teams of five men each and a two-man warehouse cadre. Shortly after these first large installations began, the need for a coordinating and liaison office at Fort Gordon was recognized. By March 1975 a liaison office was established to coordinate all shipping, supply, and installation activities of EIPO at Fort Gordon. This proved highly beneficial in control and coordination of the move, and provided the control element necessary to begin employing a "duty station" PCS assignment to Fort Gordon for EIPO personnel.

The utilization of "duty station" assignments yielded the potential for further reducing the costs of the move, and resulted in a decision to PCS several of the installer personnel. To insure that high morale was maintained and the quality of effort upheld, all installers were screened for volunteers. Their names were then submitted to MILPERCEN for reassignment authorization. Most volunteered to make the move even though for some it meant an "extra" move in their last few years of service. Approximately two-thirds of those volunteering were approved by DA, and the migration started in July 1975.

By April 1976, over 60 people had made the move, each arriving shortly before his assigned project was to begin. After their initial projects were completed, the installers were then assigned to follow-on projects. By July 1976 many projects will be completed and no follow-on projects assigned. At that time these highly qualified people will be transferred to the school as instructors. They will be armed with an intimate knowledge of their particular installations.

There is a wide variety of equipment being installed by EIPO teams. Some of the equipment involved includes: AUTODIN digital subscriber terminal equipment (DSTE), NCR-500 computers, digital computer trainers, microwave and tropospheric scatter radios, Defense Communications System (DCS) high-capacity multiplex terminals, satellite ground terminals, H-500 and 188-310 Tech Control Facilities, and several DCS-type communications terminals removed from shelters.

As you might guess from the wide variety of equipment, there is tremendous diversity in the complexity of the various projects. Since there is no single MOS for an installer, the teams are a mixture of different types of skills and expertise from several MOS areas. In addition to the electronics skills required, the teams are confronted daily with needs for carpentry, metalworking, electronic troubleshooting, identifying parts, routing air ducts, and you-name-it. These jobs are completed in stride, and installation time schedules established to support uninterrupted training are maintained.

Some of the projects are technically complex, and all require some specialized C-E skills. Consider the dexterity, concentration, and perserverance required for laying and lacing the cable; and butting, stripping, and terminating up to 70,000 individual cable pairs (often individually shielded) in the more than 170 miles of wire found in some of the larger installations. You might better appreciate the magnitude of such a task if you compare this to the 2,000 or 3,000 similar connections in the average TV set.

Most of the equipment bays are placed on some type of dunnage, which, depending on the specific site, can result in a fairly elaborate carpentry job. All installations are powered by an AC main power feed which sometimes requires hundreds of feet of

electrical conduit "plumbing." In all cases, provisions of the National Electrical Code and the installation criteria of the U.S. Army Communications Command are strictly adhered to.

High standards of installation are insured by a quality assurance (QA) team working directly for the EIPO director. They make daily checks of the ongoing projects and prepare regular reports at various phases of the project. These QA reports become a permanent record of each project and are provided to the "customer" when the project is transferred.

Most of the fixed station equipment involved is of a commercial design; consequently it does not always enjoy the documentation and identity that a standard field item normally has. In addition, highly specialized commercial test equipment is often a part of the installation. Certain peculiarities are often encountered for which there is no technical manual, and no federally stock numbered items specified for mounting or interconnecting hardware. When this occurs, it's "back to the books"—in this case the manufacturer's catalogs or other descriptive literature. A great deal of flexibility and resourcefulness is required of the project engineers and individual team chiefs when such difficulties are encountered.

Many of the installations on tight schedules must have time provided for relocating tenant courses being moved to other facilities on post. A complex schedule of realignment has been developed by the USASIGS Realignment Group, and any slippage necessitates schedule revisions or alternative relocations to prevent any course from missing a "start training" date. Many facility modifications are also required, and construction efforts are all under Military Construction, Army contract. Any delays, such as an electrical union or truck drivers' strike, can and do jeopardize the realignment installation effort. To further complicate the scheduling, some classes are still using the equipment at Fort Monmouth until the very end of the course there. Then the equipment has to be disassembled, tagged, labeled, documented, packed, crated, shipped, unpacked, inventoried, reinstalled, tested, and accepted in time for training at Fort Gordon. All of this often must be done in just a few days' time, which occasionally results in double- and triple-shift installation efforts by EIPO teams.

Frequently the final test and acceptance involves a race against the clock to troubleshoot and correct problems that might have crept in. Training equipment routinely gets some abnormal treatment during its lifetime, but when the equipment has been completely disassembled, jounced over 1,000 miles of road, jarred by on- and off-loading, and then reassembled, there is an accelerated failure rate. That, coupled with the hundreds of thousands of new electrical path connections installed, often results in strange interactions and mystifyingly erratic operation. One or more of the EIPO engineers then must work alongside the technician-installers to pinpoint the problems and take appropriate corrective actions. More often than not, equipment components must be evacuated to the electronics maintenance shop for repair before the problem is solved and the acceptance test completed. Then the installation is signed over to the appropriate course personnel.

When all of the equipment is finally reinstalled, Fort Gordon will boast its own miniature DCS, representing the most common equipment actually encountered in the field. Several stations will be hooked together in a 24 hour per day operating system known as the Integrated Communications Training System (ICTS). This will support training of nearly every signal MOS to some extent—directly for the strategic communications specialties and indirectly for the tactical courses through a realistic tactical-DCS interaction. By using the ICTS, much of the joint service training will be conducted in a realistic operating environment for the first time.

The ICTS will consist of 2 common analog microwave systems with 48-channel multiplexes, 1 new digital microwave system with time division multiplex terminals, 41 fixed station tech controls, 1 tropo link, 1 contingency HF radio link, 2 satellite ground terminals operating through a satellite simulator, and 2 tactical interfaces through GRC-50 radio links. All types of live and simulated traffic will be passed over these systems to facilitate "hands-on" training of the various fixed station MOS courses.

The simulated traffic will originate from a prototype traffic simulator which was completely refurbished by Lexington-Bluegrass Army Depot during the relocation. This simulator provides wideband analog signals, voice frequency individual channel signals, and teletype multiplex signals. These signals can be either of normal quality or processed through special equipment to degrade the signals in a manner representing known disruptions in the real world environment. The degraded signals provide a realistic simulation of equipment or path problems, and provide an effective tool for teaching system troubleshooting without having to wait for sunspot cycles, rain fades, or actual equipment failures. All training will be enhanced by this network.

Throughout 1975, several EIPO teams were formed to dismantle, move, reinstall, and check out 45 of the 92 major projects. Proof of their success is seen in the subsequent training successfully conducted on the projects installed. Every class has commenced on schedule, in spite of some very short times between the completion of training at Fort Monmouth, and the beginning of training at Fort Gordon. The instructors completed the tasks despite setbacks due to weather, complex shipping and receiving schedules, and short-fuzed military construction timetables.

Next time you get orders, just think of making your move by completely dismantling everyting—then be thankful you don't have to!

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