ARMY LOGISTICIAN

JULY-AUGUST 1976

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ABOUT THE COVER

Army Logistician salutes the United States on its 200th birthday with an original cover by Charles F. Marie, symbolizing the spirit of '76. The concluding article of the Continental Army Logistics series begins on page 12.

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—Major Joe C. Creel
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Army Logistician's mission is to provide timely, authoritative information on Army and Defense logistics to the Active Army, Army National Guard, Army Reserve, civilian employees of the Army, and the public. Its purpose is to increase knowledge and understanding of logistics and to assist in achieving the Army's information goals.

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Articles, photographs, illustrations, and items of interest on any facet of Army logistics are invited. Direct communication is authorized to: Editor, *Army Logistician*, Army Logistics Management Center, Fort Lee, Va. 23801.

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ALOG EMPHASIS

USAREUR LOGISTICS UNDER NEW COMMAND

The Army Materiel Management Center, Europe, has been established as a separate command under operational control of the Deputy Chief of Staff for Logistics, United States Army, Europe (USAREUR). The new command, established under the plan for modernization of logistics in USAREUR, will be a control center permitting centralized management over designated theater assets through continuous review of supply and maintenance actions. Headquarters for the center will be located at Kreuzberg Kaserne, Zweibruecken. The Army Materiel Management Agency, Europe, is scheduled for inactivation on 30 September 1976.

COGS TEAM IN KOREA

An evaluation of the combat-oriented general support (COGS) system (see *Army Logistician*, January-February 1976) is being conducted in Korea by a combined team representing the Army Logistics Center and Ordnance Center and School. Implementation of the COGS concept is anticipated by October in Korea. If successful, it will then be implemented in Europe and CONUS by February 1977.

PROMS UNDERWAY AT DARCOM

The new Procurement Management System (PROMS) of the Army Materiel Development and Readiness Command's Requirements and Procurement Directorate is now operational. Implementation of the Procurement Management System is expected to provide better control of procurement functions and to streamline data and reporting requirements. The system provides for maximum participation of DARCOM activities in establishing procurement objectives and insures prompt feedback on results of procurement actions.

SAILS MORATORIUM LIFTED

The moratorium on the extension of the Standard Army Intermediate Level System (SAILS) in the continental United States was recently lifted. This permits a planned extension of the system to seven additional installations by the end of this year. The moratorium was imposed in 1974 pending resolution of initial technical, financial, and functional problems. With the planned extension, 27 CONUS installations and 2 corps support commands will be under the SAILS system.

NATIONAL GUARD GETS COSCOM

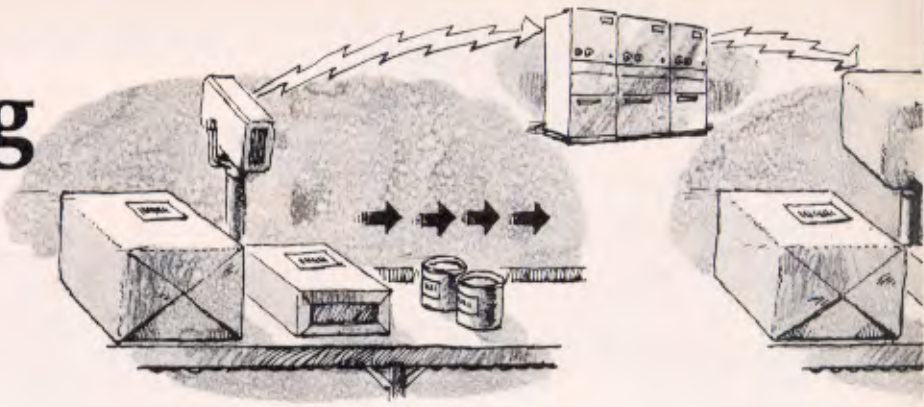
The 167th Support Brigade of the Alabama Army National Guard (ARNG) will be expanded and reorganized as the 167th Corps Support Command. As the first and only COSCOM in the Army National Guard, the new type of command will carry out the Army's latest doctrine for providing combat service support in a theater of operation, according to a Guard spokesman. Headquarters for the new ARNG COSCOM will be located at Fort Persons in Birmingham and have a complement of 303 officers and enlisted men, an increase of 73 over the original brigade. Subordinate units directly under the COSCOM, with a combined strength of 387, are the 167th Materiel Management Center and the 167th Movement Control Center. Other logistics units, totaling about 3,300 personnel throughout Alabama, have also been placed under the COSCOM for training supervision.

(Continued on page 46)

Bar Coding

Can Army materiel earn its stripes?

by Beverly B. Joyce



Those little stripes you see on almost every item on grocery store shelves today make up a configuration known as a "bar code," specifically the Universal Product Code (UPC). In many stores, the code is read by scanners for various purposes.

At the checkout counter, for example, a scanner may send the information in the code to a small computer in the store. The computer finds the price and sends it back to the register, which prints the item's name and price on the customer's receipt. In some operations, inventory records are automatically updated through scanning the UPC.

The use of bar codes hasn't been limited to the grocery industry, however. For example, the U.S. Postal Service was instrumental in pioneering two approaches to bar coding, one to sort mail sacks and one to convey significant data, such as zip codes, in order to speed deliveries. Presently being tested at the U.S. Army Mobility Equipment Research and Development Command at Fort Belvoir, Virginia, is a system designed to electronically identify large cargo transporters and vehicles by serial or license numbers contained in bar codes affixed to the items.

Could the Army use the UPC or a similar code on military supply items to enhance customer service? The Army Materiel Development and Readiness Command (DARCOM) Packaging, Storage, and Containerization Center—located at Tobyhanna, Pennsylvania—conducted a study to answer that question for depots and consolidation and containerization points (CCP's).

Before determining the possible applications of bar coding for depots and CCP's, the study group examined the state of the art of bar coding, looking into all available bar codes, code printers, scanning equipment, sources, costs, and uses. The study was devoted primarily to scanning systems in which a scanner reads a bar code containing information, a decoder unit interprets the data in the code and communicates with a computer, and the computer acts on the data it receives from the decoder.

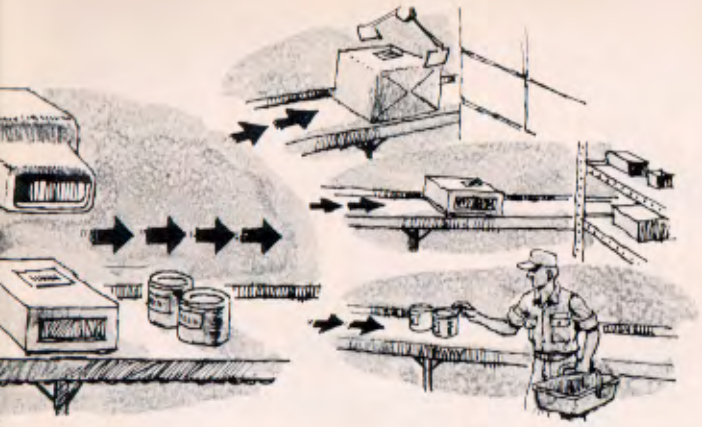
Bar code symbols, in general, use the height and width of marks and the distance between marks to express numbers and letters. Most are structured in vertical or horizontal linear patterns. Others are circular in form. A circular code, or "bullseye," requires about five times the space of a straight-line code to present the same data, but a circular code can be read in any direction. A straight-line code can only be read in any direction if several scanners are used at one location. A circular code is thus preferred where the placement of the code cannot be controlled.

Two bar codes being used in general merchandising and industrial warehousing applications are the UPC and a flexible code which is printed by several companies, including Identicon, 3M, and Markem.

UPC symbols normally contain 11 digits to describe an individual consumer package. The first five digits, assigned by a central administrative activity, identify the manufacturer. The second five, assigned by the manufacturer, identify the product. The 11th digit is printed to the left of the code pattern and is called a number system character. It is used to insure any necessary compatibility with other codes developed by industry, such as the National Drug Code or the National Health Related Items Code.

Because letters, as well as numbers, would have to be represented in some potential Army applications of bar coding, the use of a flexible bar code may be required. Unlike the UPC, a flexible bar code can depict both letters and numbers. Such codes can be used in applications where space isn't such a critical factor as it is in coding grocery items. A flexible code is a larger-field bar code that lends itself to bidirectional reading by hand-held wand scanners or fixed scanning machines that aren't overly sensitive to field orientation.

Bar codes can be applied in several different ways. They can be printed on address labels or documents, along with other required data, or placed directly on materiel. Users can requisition preprinted, pressure-sensitive bar code labels from private manufacturers, or they can purchase and use small machines (similar in appearance to typewriters) to produce bar code labels for batch, sequential, or random manual application. There are many automatic bar code labeling machines available in industry on which rolls of batch or sequential labels are placed. However, only one manufac-



Bar codes are being used successfully in the grocery industry. They may prove to be equally advantageous in depot and consolidation and containerization points operations.

turer is known to be producing a computer-interfaceable bar code labeler that would meet the Army's potential random bar coding requirements.

The two most commonly used types of preprinted labels are opaque paper and retroreflective. These vary in cost from approximately ¼ cent to 45 cents each, depending on kind, size, and quantity. Retroreflective labels are more expensive than opaque paper ones. Bar code labels can also be found in card stock, foil, plastic, cloth, mylar, and metal.

Three basic types of scanning devices are available for off-the-shelf purchase.

The photocell scanner was the first on the market. Its operation is based on a fixed position of the photocell or photoelectric cell, sometimes referred to as an "electric eye." The cell is usually incorporated in an electric circuit and is used in controlling various mechanical devices.

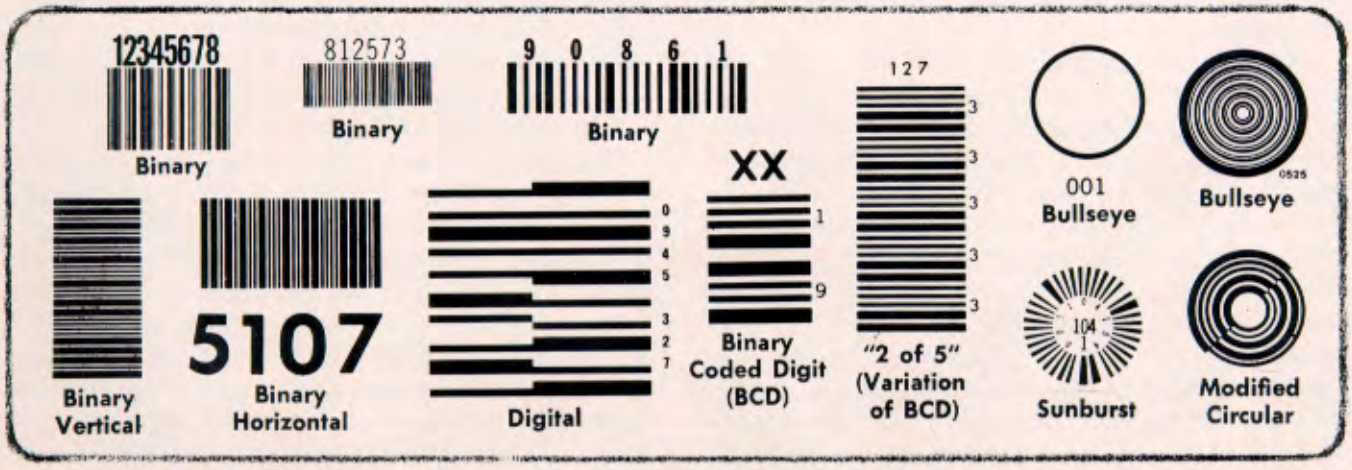
In scanning operations, the cell scans a mark—for example, a retroreflective strip on a tote pan—while the object scanned is moving on a fixed path. The system's capabilities are quite limited. It can only pick up the presence of a code format or note the presence or absence of a single mark. This type of scanning does not require a computer.

Rotating scanners, also known as moving beam scanners, are more versatile. This type of scanner rotates a very narrow concentrated light beam traveling in a vertical plane at speeds of more than 1,000 revolutions per minute. The scanner obtains multiple readings as a code passes.

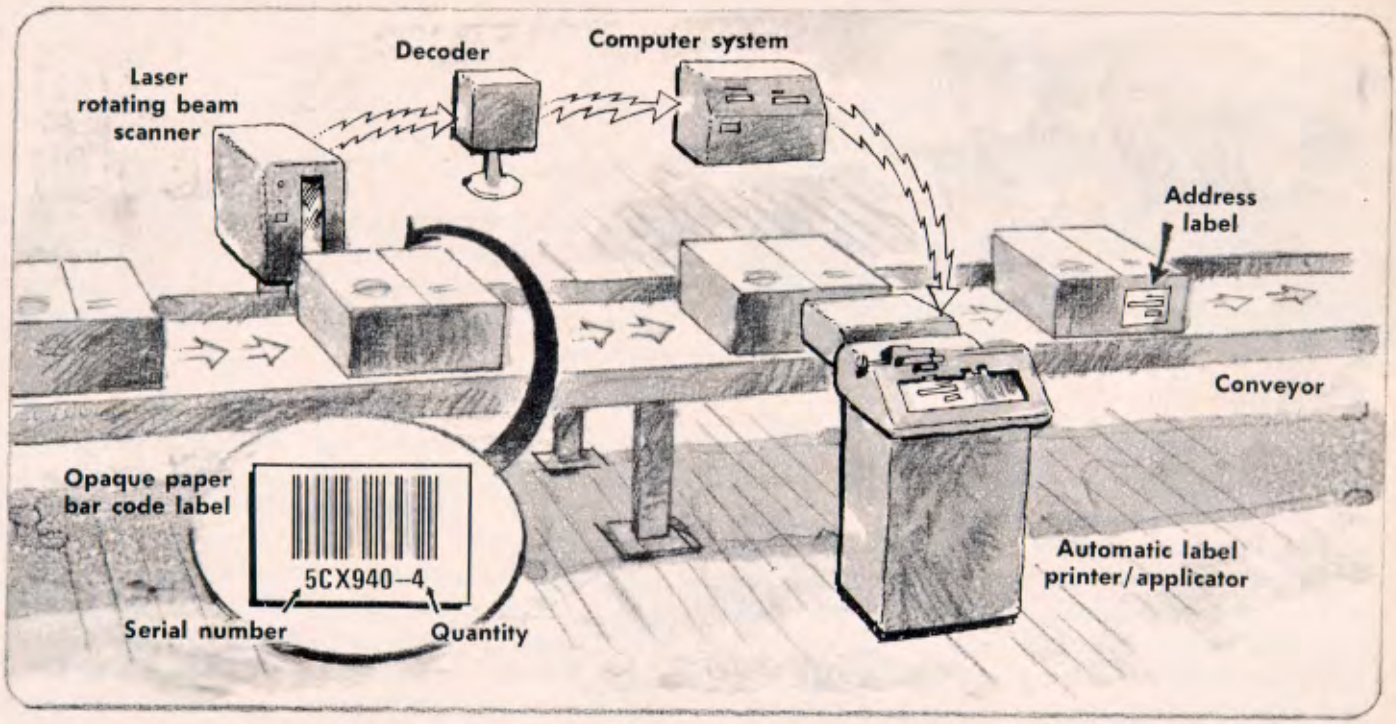
A rotating scanner's source of light usually is a laser beam or an incandescent lamp. Generally an incandescent scanner is a little less expensive than one using a laser; however, the retroreflective labels that must be used with incandescent scanners are about 40 times as expensive as opaque paper labels, which can be scanned by laser scanners. The power output of a laser bar code scanner is less than 10 microwatts and isn't strong enough to pose a safety hazard in depot operations.

In contrast to a photocell scanner, a rotating scanner is able to read a substantial area on the surface of a container, and it possesses greater depth-of-field capability. Rotating scanners can be located beside a conveyor to read the sides of containers as they pass, underneath a conveyor to read the bottoms of containers, or above a conveyor to read the tops of containers and the interiors of tote pans.

Hand-held scanners are the third type of scanner available for off-the-shelf purchase. The newest development in the field, these scanners take the form of a pen, a wand, or a two-cell flashlight. They can be used with portable cassette recorders that can store scanned information for subsequent transfer into a computer.



☐ A few of the many bar code formats available.



☐ Bar code scanning could direct a device that automatically prints and applies address labels.

Typical applications include scanning items that are not adaptable to conveyor operations and items that are stationary. For example, hand-held scanners could be used in inventory operations in a storage warehouse.

Many scanners are very durable and can withstand extreme environmental conditions. For example, the Delaware River Port Authority uses rotating incandescent scanners stationed out-of-doors throughout the year for toll payment accounting.

Due to the wide use of shrink-filming in military packing today, it was necessary to test the scanning of bar code labels through various thicknesses of transparent polyethylene film. In the tests, the polyethylene film killed the reflection of the retroreflective labels to such an extent that scanning by incandescent lamp was not possible.

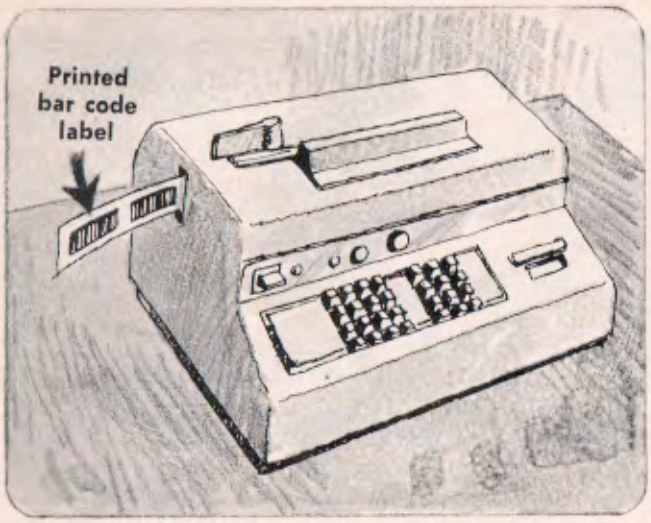
One scanner manufacturer tested the scanning of opaque paper bar codes through polyethylene using rotating laser scanning equipment and achieved positive results. The company's engineering department reported that laser scanners can read all labels with a print contrast ratio of greater than 80 (the standard minimum in industry) through 3-, 6-, and 8-mil films, the films now most commonly used in depots and CCP's. However, the scanner must be set at a slight angle to avoid specular reflections. The film does modify the depth of field obtainable, which means that greater effort has to be expended in locating containers in front of the scanner. The company also tested pen scanning on the polyethylene and found that thicker films are better since they seem to cause less pen drag.

There are a number of operations in DARCOM depots and CCP's to which bar code scanning is potentially applicable: marking and consolidating conveyorized freight; small parcel sorting; location survey; location addition and deletion; and receipts (balance on hand update) and intransit data processing.

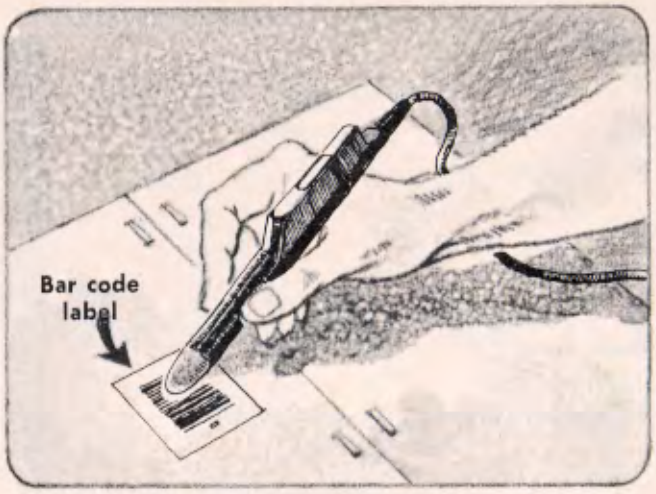
In materiel identification marking, inventory, and receiving applications, it would be possible to depict the national stock number, as well as other data pertaining to a military supply item, in a flexible bar code. One bar code manufacturer asserts that bar codes can accommodate up to 60 characters; however, the size of the code increases relative to the amount of data encoded, and scanning time is lengthened.

Shipment address marking of conveyorized freight in depot packing operations is a process to which bar code scanning may be applied.

SPEEDEX (System Wide Project for Electronic Equipment at Depots Extended) is the automated, integrated, standardized data processing system used by depots. The system has produced a computer-generated military shipment label that makes possible the preparation of labels for all containers going to one customer on one particular day. Depots using the computer-generated label must manually reproduce the required number of labels on a copy machine. Others use stencils to address materiel or else type each label needed.



☐ Some label printers resemble typewriters.



☐ Hand-held scanners are a new development.

The automatic preparation and application of standard military markings is being evaluated as a replacement for the manual methods. Being considered for use is an intelligent printer and applicator, advertised to automatically print, burst, glue, and apply paper labels to flat surfaces. It is termed "intelligent" because of its capability to print in various sizes and because a minicomputer is contained within the printer.

Bar code scanning could be the means to activate the marking mechanism in the process. A six-character shipment planning worksheet serial number is the key to each customer address in computer files. It appears in various shipping documents, including DD Form 1348-1A, Department of Defense Single Line Item Release and Receipt Document, which follows a shipment throughout the distribution pipeline. Using a small typewriter-like bar code label printer, one employee in a packing activity could key in the serial number and the quantity of containers requiring the same address, and he would immediately obtain a pressure-sensitive bar code label depicting the serial number and quantity. This label could be placed on one side of the first container of all containers under one serial number on a conveyor, and the label could be scanned by a rotating beam scanner to activate the automatic preparation and application of address data.

Also being considered for use in the process are the printing of bar codes directly on DD Form 1348-1A and the introduction into the system of an electronic accounting machine card containing bar-coded data.

Another feasible application of scanning is small parcel sorting by activity address. The automatic sorting system operational in the New Cumberland CCP is controlled by a cathode ray tube with a keyboard manually operated by one employee in the operation. For automatic sorting by address, the employee keys in the last four characters of the six-character activity address code and the priority of each small parcel. With computer reprograming, a rotating beam scanner could replace the cathode ray tube unit and the operator requirement, accomplishing the same functions through bar coding the activity address codes on the parcels.

Still another possible application is bar coding of receipt data—such as the national stock number, the requisition number, and the quantity—for scanning in depot receiving activities to automatically update computer inventory records.

Bar coding could also be used for routing the materiel on receipt. In one depot operation, for example, one conveyor line may feed incoming materiel to other conveyor lines destined for different points in the depot complex—loose issue storage, bulk storage, packing, or shipping.

The installation of bar code scanning equipment at selected Army depots is currently being considered. Based on the findings of the DARCOM Packaging, Storage, and Containerization Center's study, Army materiel can earn its bar code stripes. Of course the areas of application must be carefully selected, and the benefits derived must be measured with a total system objective in mind. ALOG

Beverly B. Joyce is a packaging specialist at the Army Materiel Development and Readiness Command's Packaging, Storage, and Containerization Center, Tobyhanna, Pennsylvania. She holds a bachelor's degree from North Texas State University and is a graduate of the DARCOM Supply Management Career Intern Program.

Each member of the USAR Research and Development Officer Career Program leads a double life and moves from . . .

Desk to Desk

by Colonel James L. Wohlfahrt, USAR

☐ David W. Yarbrough—at work in the lab and classroom.

Sitting in his office at Tennessee Technological University, David W. Yarbrough, associate professor of chemical engineering, gazed at the pile of Spring term final exams he had just finished grading. The challenge of teaching undergraduate and graduate courses in chemical engineering had subsided, but would resume in September.

His thoughts turned to Summer, and to the prospects of conducting further research in the areas of thermodynamics, heat transfer, and solid state technology. He would also complete his article on silicon oxides for the International Journal of Thin Solid Films. For David though, the approach of Summer spurred anticipation of yet another pursuit—two weeks of military duty, serving as a research engineer with the U.S. Army Electronics Command at Fort Monmouth, New Jersey. It would be a period during which he could, as a major in the U.S. Army Reserve, serve his country as well as employ the skills and knowledge that accompany his doctorate in chemical engineering.

As his computer program tumbled to a stop, John C. Atkinson removed the program deck from the card reader. The workday was drawing to a close, and he thought about the heavy traffic he would face while driving to his home in Alexandria, Virginia.

The soft drone of the computer at USFDA's Bureau of Foods provided John an atmosphere conducive to a few moments of reflection. His thoughts flashed briefly across town to Walter Reed Army Medical Center. John was pleased with the results of his recently developed statistical analysis on the content of a new pesticide. He wondered, however, about the prospects of a similar application to a special problem he would soon face.

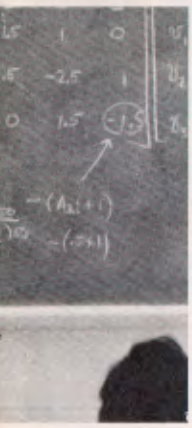
Having earned a master of science degree in nutrition and a doctor of philosophy degree in biochemistry, John works as a mathematical statistician for the Food and Drug Administration. He is involved daily with information retrieval, data base management, computer programing, and statistical simulation in the fields of medicine and pharmacy. For the next two weeks, though, John will not hear the hum in the computer room. Nonetheless, his efforts in the medical field will continue. For the next two weeks, John, as a mobilization designee, will wear the uniform of a lieutenant colonel in the U.S. Army Reserve at Walter Reed Army Medical Center.

From desks around the Nation, both in industry and in Government, David and John are typical of the more than 500 members of the U.S. Army Reserve Research and Development Officer Career Program who assume highly specialized roles as they annually take their places on active duty training in locations sometimes far removed from their civilian employment.

In military uniform for short periods of time, these mobile reservists use their scientific, engineering, and managerial training and experience to further the Army's research and development mission in a program designed to fulfill requirements for qualified research and development officers during a partial or general mobilization. Through this program, Army agencies are provided the means for conducting continuous and effective training to obtain and maintain research and development officer proficiency during times of technological change.

The program embraces a broad range of positions within the biological, physical, chemical, earth, engineering, mathematical, medical, behavioral, and business sciences. More than 700 such positions exist in various agencies throughout the Army.

Military and professional qualifications for participation in the program are stringent. Officers selected for the program must have demonstrated high potential for positions of responsibility and must have completed the military schooling appropriate to their branch, grade,



☐ John C. Atkinson—professionalism in the medical and health sciences.

and length of service. An officer selected to participate in the program must be qualified to perform managerial, scientific, or engineering duties. He must possess at least a master's degree in a science or engineering area from an accredited school.

Under the Officer Personnel Management System's new skills identification code, participants in the program are awarded specialty skill identifier 51A, research and development coordinator.

Training and education development must be maintained in highly specialized skill areas. Job-related active duty training with a proponent Army agency prepares individuals like Major Yarbrough and Lieutenant Colonel Atkinson to better assume their roles in the event of a national emergency. However, other self-development educational opportunities provide significant additions to their knowledge and understanding of current research and development philosophy, organization, and policy.

Both Major Yarbrough and Lieutenant Colonel Atkinson will also find time during the Summer to appear in uniform behind yet another desk—this time as students in one of the five two-week phases of the Research and Development Education Program offered annually by the Army Logistics Management Center at Fort Lee, Virginia. This program provides education in the areas of research and development management, weapons system life cycle management, and the theory and application of operations research techniques.

Completion of all five phases of this program qualifies the individual for a Department of the Army Certificate of Proficiency as a research and development manager. Because each individual's civilian employment situation varies, as does the availability of funds, not all program members are able to attend both an active duty training tour with their proponent agency and a two-week training tour.

From desks in industry and Government, to desks in Army agencies, to desks in classrooms at Fort Lee, members of the U.S. Army Reserve Research and Development Officer Career Program stand out as contributors to the total force policy and to the readiness of the Individual Ready Reserve in time of need. ALOG

USAR R&D Officer Career Program
AR 140-1

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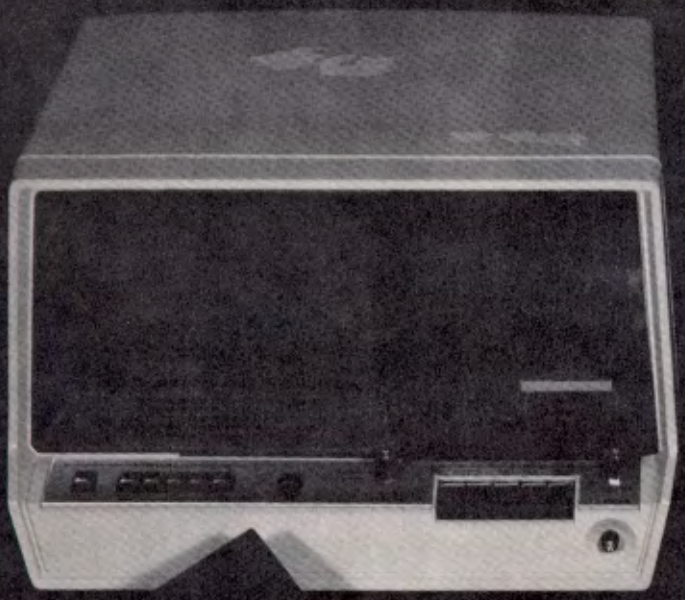
Fort Lee, Virginia 23801

Colonel James L. Wohlfahrt, USAR, is a logistics management specialist at the U. S. Army Logistics Center. While on active duty, he was assigned to the Reserve Affairs Office, Army Logistics Management Center, Fort Lee. He is a graduate of the Army Command and General Staff College and holds a master of science degree in logistics management from the Air Force Institute of Technology.

New methods, literature, and equipment support--



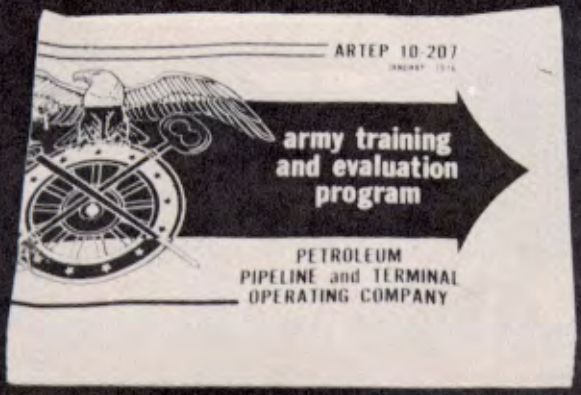
Replacing PLL Items

TRAINING EXTENSION COURSE

SKILL QUALIFICATION TEST

SMALL ARMS REPAIRMAN
SQT 2

FOR OFFICIAL USE ONLY



Training of Logistics Units

by Lieutenant Colonel James Bickley
and Captain Kenneth J. Utecht, Jr.

The job of logistics personnel—support of the combat arms—is an important one, and the quality of the logistics support they provide can make the difference between success or failure in the field. Well-trained logistics support personnel are one of the most important factors to insuring quality support and, ultimately, mission accomplishment.

A fundamental consideration then is training. From the day of entry to the day of discharge, soldiers are constantly training and learning. Training can be categorized as individual or as team (collective). Both types can be conducted either in a resident instructional mode or at the unit. In today's Army, the emphasis is on taking the training to the soldier. This means less institutional training and more training at unit level. Additional advantages as a result of this new direction in training include a reduction in overall training costs and improved training.

In support of these changing trends in training, the Army Training and Doctrine Command (TRADOC), working together with its centers and schools, is developing a variety of different training documents to assist the unit commander and the individual soldier in achieving training objectives.

Three training documents being developed that will directly affect all enlisted soldiers are the Soldier's Manual, the Training Extension Course (TEC), and the Skill Qualification Test (SQT).

The Training and Doctrine Command service schools are in the process of task-analyzing all enlisted military occupational specialties (MOS) for which they are proponents and developing task lists that give the tasks to be performed by personnel in each enlisted MOS. The task lists are subdivided according to the five skill levels under the Enlisted Personnel Management System. These are Skill Level 1, Grade E-1 to E-4; Skill Level 2, Grade E-5; Skill Level 3, Grade E-6; Skill Level 4, Grade E-7; and Skill Level 5, Grade E-8 and E-9.

These task lists are then examined to select the critical tasks, which are used for development of the Soldier's Manual, Training Extension Course, and Skill Qualification Test as well as other training materials, such as Individual Training Plans and revised nonresident instruction.

A combined Soldier's Manual will be developed for skill levels 1 and 2 of each MOS. Soldier's Manuals for skill levels 3, 4, and 5 will be published as separate manuals that can be added to the 1 and 2 level manuals. Soldier's Manuals should be used by the soldier as a study guide for performance of his or her job. Some of the tasks in the Soldier's Manual will be taught in resident instruction at Army schools; some may also be taught through nonresident instruction. Others will be taught through training in the soldier's unit.

The introduction of the manual will give a general overview of training and MOS progression to be expected throughout the soldier's career. The remainder of the manual will be devoted to the critical tasks associated with the appropriate skill level and MOS. The Soldier's Manual will list each critical task, conditions under which the soldier is expected to perform the task, equipment required to perform the task, performance measures that must be followed for successful accomplishment of the task, standards that are expected for the task, and references that the soldier may use to study for the task.

Once the soldier has mastered all of the tasks in the Soldier's Manual that is issued to him initially, he should request the Soldier's Manual for the next higher skill level and begin learning the tasks in that manual. Through this means, the soldier will be able to perform the critical tasks within his MOS and skill level.

One of the major means by which the soldier can learn some of the critical tasks in the Soldier's Manual is through the Training Extension Course program.

The Training Extension Course uses performance-

oriented, self-paced instructional materials that are designed to teach the soldier critical skills. Lessons are based on the same thorough task analysis that identifies the critical tasks listed in the Soldier's Manual. The soldier must be able to perform these tasks in order to accomplish his particular job or MOS. By adding the conditions under which the tasks are to be performed, and the desired level of proficiency, a performance objective is established for which training materials are developed. During the development cycle, all TEC lessons are "tried out" on soldiers representative of the target audience to insure that the lessons enable the individual to reach the desired standards.

Each TEC lesson is accompanied by Lesson Administrative Instructions (LAI). The instructions provide guidance on how to use the system and a pre- and post-test that serve as a diagnostic tool. The pre-test assists the training manager in identifying individual training weaknesses while the post-test establishes a measurable performance standard.

Depending on the subject matter, TEC training materials are prepared in one or more modes.

•**Audiovisual**—Audiovisual lessons consist of a super 8 filmstrip and an audio cassette that require the soldier to interact with the instruction in order to reinforce the skills he acquires. The system hardware is designed for use by the individual or by small groups.

•**Audio only**—These lessons permit the soldier to accomplish hands-on practical work while listening to an audiotape that "talks" him through the exercise. Programed stops in the tape permit him to perform the hands-on training and then proceed further. By using a small portable playback recorder, the soldier can be trained in confined areas not suitable for the use of an audiovisual device.

•**Printed material**—Programed texts are especially suitable for procedures that are subject to frequent change such as repair parts supply procedures. Lessons developed in this format are relatively inexpensive to produce and revise as necessary.

•**Skill practice exercise**—These are exercises that permit the soldier to practice the skills he has already acquired to increase his proficiency. They may be incorporated as a part of a lesson developed in another medium or may stand alone.

The Army Logistics Center, Fort Lee, Virginia, is responsible for managing the TEC efforts of the Ordnance, Missile and Munitions, Transportation, and Quartermaster Schools. The initial effort of the logistics schools was aimed at two critical duty positions —the TAMMS (The Army Maintenance Management System) clerk and the PLL (prescribed load list) clerk. These lessons are nearing completion. Logistics-oriented lessons are currently being developed for troubleshooting; wheeled vehicles, tracked vehicles, and weapon systems; ammunition storage specialist; unit supply; and traffic management coordinator. The Training Extension Course can provide the field commander with an effective tool to help fill the gap that exists between "required" and "existing" performance and to increase the proficiency of the individual soldier in his unit.

Under the present system, the soldier is tested periodically to insure that he can perform his job. Under the Enlisted Personnel Management System, the soldier will also be tested, but the test will differ somewhat from the current test. The new test document will be the Skill Qualification Test.

The SQT will be administered annually, but individual soldiers will only be required to take the test every two years in their primary MOS and once during their career in their secondary MOS. The SQT will consist of critical tasks from the soldier's present and next higher skill levels. To indicate that he is qualified to perform in his MOS at his present skill level, the soldier must obtain a minimum passing score on his SQT. To indicate that he is qualified to perform at the next higher skill level, the soldier must obtain a higher passing score in the SQT. The cutoff points for minimum and higher

☐ Hands-on performance improves learning.

☐ Audiovisual systems allow self-paced training.

passing scores have not been established as of this time. Although the soldier is only required to take the SQT every two years, he has the option of taking the test each year if he wishes to raise his score.

To provide a document for the training of both Active Army and Reserve component units, TRADOC has a priority project currently ongoing to develop the Army Training and Evaluation Program (ARTEP). This program is designed to replace the traditional Army Training Program (ATP), Army Training Test (ATT), and Operational Readiness Test (ORT). ARTEP is performance-oriented unlike the time-oriented testing procedures of the ATT, ATP, and ORT.

This program provides the unit commander guidance as to what training his unit needs as well as to how his unit's performance will be evaluated. It specifies tasks, conditions, and standards for each subordinate element of the unit (company, platoon, section, or team) and is readily adaptable to concurrent training. ARTEP is to the unit what the new skill qualification test is to the individual soldier.

The logistics service schools are responsible for writing the ARTEP for the units for which they are proponent agency. The ARTEP undergoes an extensive validation process to insure fielding of a viable training and evaluation program. The user is able to make significant contributions to a training product by which his unit will be evaluated and trained in the future.

Another exportable training package available to the logistics unit commander is the "LOGEX-Local." This training vehicle is an offspring of the annual Logistics Exercise (LOGEX), the Army-directed combat support and combat service support exercise prepared and conducted by the Logistics Center.

LOGEX-Local is a command post exercise designed to enhance the operational readiness posture of Active Army and Reserve component units by providing a TOE mission-oriented training vehicle for the key command and staff elements of the unit. It permits a unit to conduct an exercise at its home station. The Logistics Center takes the national exercise materials and designs or tailors the material for use by a single unit.

This packet consists of exercise guidelines, scenario, plans and orders, a complete set of maps and overlays, all applicable situation messages, a commander's checklist, and most important to the Logistics Center, a request that the material and exercise be critiqued and recommendations for improving the packet be returned. Approximately 25 different types of unit packets are prepared and distributed around November every year. Additional requests received throughout the year are filled if funds and materials are available. In 1976 approximately 500 packets will be mailed based on unit priorities identified by Headquarters, United States Army Forces Command.

The LOGEX-Local provides the unit with a ready-made exercise. However, the unit must tailor the packet to its own particular needs. Since the unit commander is the one who best knows the needs of his unit, he is able to stress these points in his particular exercise. Additionally, one of the best methods of training devised is practical experience. Members of the unit must spend time preparing for their exercise. They learn the doctrine and staff coordination and eventually become the teachers or controllers for other unit members.

All of these changes in training methods and documents reflect the efforts of the Army Training and Doctrine Command to provide the best possible training for our logistics support personnel and to export training to the field in order to reach the largest number of soldiers possible. ALOG

Lieutenant Colonel James B. Bickley is a training officer with the Logistics Training Board of the Army Logistics Center, Fort Lee, Virginia. He is a graduate of the Command and General Staff College and holds a B.S. degree in business administration from Presbyterian College, Clinton, South Carolina.

Captain Kenneth J. Utecht, Jr., is a logistics staff officer with the Training and Education Directorate of the Army Logistics Center, Fort Lee, Virginia. He holds a master's degree in logistics management from the Air Force Institute of Technology.

Final in a Series

Continental

Many factors impeded Continental Army logistics efforts during the Revolution. For example, American administrators were inexperienced and forced to operate within an organizational structure that was often inefficient and sometimes unstable. On some occasions sufficient supplies simply couldn't be located. Britain dominated the seas, held American ports, managed to cut off some inland supply sources, and outbid the Colonies for the use of other sources.

Other complications included the effects of private enterprise by sutlers, inadequate care of horses, too few wagons, and hard Winters, to name only a few.

Three major impediments surfaced repeatedly to plague American administrators. These lay at the root of most logistics problems during the war—

- The difficulties of transporting men and supplies over vast distances in a country with few good roads.
- The absence of a central directing authority with sufficient power and an adequate executive apparatus to effectively marshal the resources of the country.
- The financial problems that peaked in the years 1779-80 and paralyzed supply efforts.

Transporting the Army's men and supplies was a primary duty of the Quartermaster General's Department. When the Army moved by land, the department had to supply wagons; when the force moved by water routes, the department had to supply boats. The department was also responsible for furnishing horses, pack animals, and forage; opening and repairing roads; choosing sites for bridges; and examining fords.

A number of factors contributed to the department's inability to provide adequate transportation. Among these were insufficient funds, the depreciation of the currency, an inadequate administrative structure, and a lack of cooperation between and among members of the department, members of Congress, and leaders of the Army in the field. Other problems included such frustrations as the slow pace of ox teams and the pilferage of supplies en route.

Perhaps the greatest single transportation problem, however, was the simple fact that the Army's men and supplies had to be transported great distances in a land of rivers, marshes, forests, and poor roads. Britain's control of ports and coastal waterways restricted American supply to inland transportation. Complicating this, in colonial times lines of transportation primarily ran east-west along main rivers; however, the war necessitated a north-south axis of transportation along undeveloped overland routes.

When the Quartermaster's Department lacked the funds to buy or lease wagons and horses, the department was authorized to impress those items. Impressment precipitated resentment for both the Congress and the Army, and it aroused little citizen sympathy for the plight of American troops. Army administrators professed to dislike the use of impressment, but they employed the expedient when it was necessary to do so.

Some improvements were made in the Army's system of transportation during the Revolution. Early in the war the Quartermaster's Department acted to hold drivers accountable for the supplies they were contracted to transport. Each driver was required to carry a copy of a bill of lading to be endorsed by the person receiving the shipment. After receiving this endorsement the driver could receive his pay. Later in the war

Army Logistician gratefully acknowledges the assistance of Dr. Robert W. Coakley, Deputy Chief Historian at the Center of Military History, who reviewed the series for historical accuracy.

Army Logistics—*An Overview*

Quartermaster General Nathanael Greene developed a comprehensive system of grain depots to provide forage, and he established a number of small magazines instead of a few large ones. This improved supply availability and reduced transport requirements.

The movement of the Army to Yorktown in 1781 was the greatest American transportation achievement of the war. It entailed moving the Army over 450 miles in less than two months. The movement succeeded due to General Washington's excellent direction of the effort, combined with admirable financial management on the part of Superintendent of Finance Robert Morris, substantial help from the French, and the cooperation of Army and State administrators.

In other logistics efforts during the war, however, administration wasn't always so effective. The Army was organized in departments, following the British example, without a central authority to coordinate departmental efforts. American military administration was thus burdened by decentralization, that is, by the lack of a central governing authority with the power needed to marshal the country's resources.

Congress established various offices to serve and supply the Army. Their responsibilities and relationships were often vague and often shifted. By 1779 the various offices were for the most part brought under the control of the Board of War. Still, administration remained decentralized and structured according to function. No single officer was responsible for coordinating administration.

In February 1781 Congress dealt more directly with the issue of central authority, establishing three executive departments—treasury, marine, and war—each under the direction of a single administrator responsible to Congress. Of these three departments, however, only the Treasury Department had the opportunity to operate effectively before the end of the war.

The lesson learned during the Revolution of the need for a single, strong executive authority to carry out the decisions of Congress was clearly appreciated after the war, and it was applied in the drafting of the Constitution.

Financial problems crippled logistics during the Revolution as much or more than any other factor.

In July 1775 Congress authorized the issue of paper money, not to exceed 2 million Spanish dollars, to be supported by tax quotas levied on the States. This financial tack proved adequate to launch the Revolution. However, Congress found that it couldn't rely on the States to collect taxes to support the war. The colonists had refused to accept the taxation imposed by the British, and they were generally unwilling to endure taxation even in support of the Revolution. The quotas were never filled, and the uncontrolled issue of currency eventually caused runaway inflation.

Until mid-1778 continental money remained fairly stable at a ratio, with respect to gold, of about 4 to 1. By April 1779 the ratio had climbed to 20 to 1, and a year later it stood at 60 to 1. By the Spring of 1780 the Army had no money and no credit.

Congress then turned to a system of "specific supplies," requisitioning quotas of food and other goods from the States. However, States were as unable to deliver goods as they had been unable to deliver tax monies; the system was poorly administered; and transporting the supplies that were provided by the States was a nearly impossible task.

In the Spring of 1781 Robert Morris was appointed Superintendent of Finance. He put the Treasury Department on its feet by obtaining specie through personal loans and import transactions. Increased aid from France included advances that enabled Morris and his associates to establish the Bank of North America, used effectively to circulate notes and extend credit.

Congress authorized the use of private contracting for Army supply, and Morris directed the application of the system to the Army's advantage.

Private contracting and excellent financial management by Morris helped to make possible the Army's movement to Yorktown in 1781. The ensuing victory over Cornwallis signaled, in effect, Britain's failure to defeat its rebellious Thirteen Colonies. After the Yorktown Campaign the British Cabinet was overthrown, and a new government in England recognized that the war in America was lost.

The logistics problems of the Revolution were extremely difficult to resolve. Yet early American patriots were devoted enough to overcome those obstacles or to persevere under the burdens of those they couldn't circumvent.

Assisted by the French and others, dedicated Americans managed to sustain the Continental Army for most of a decade. In doing so they made an important contribution to victory in the American Revolution. ALOG

Ask For It Clearly

by Lieutenant Colonel Donald M. Keith
and Charles A. McCarthy

Saying what you mean and meaning what you say is vital to the materiel acquisition process.

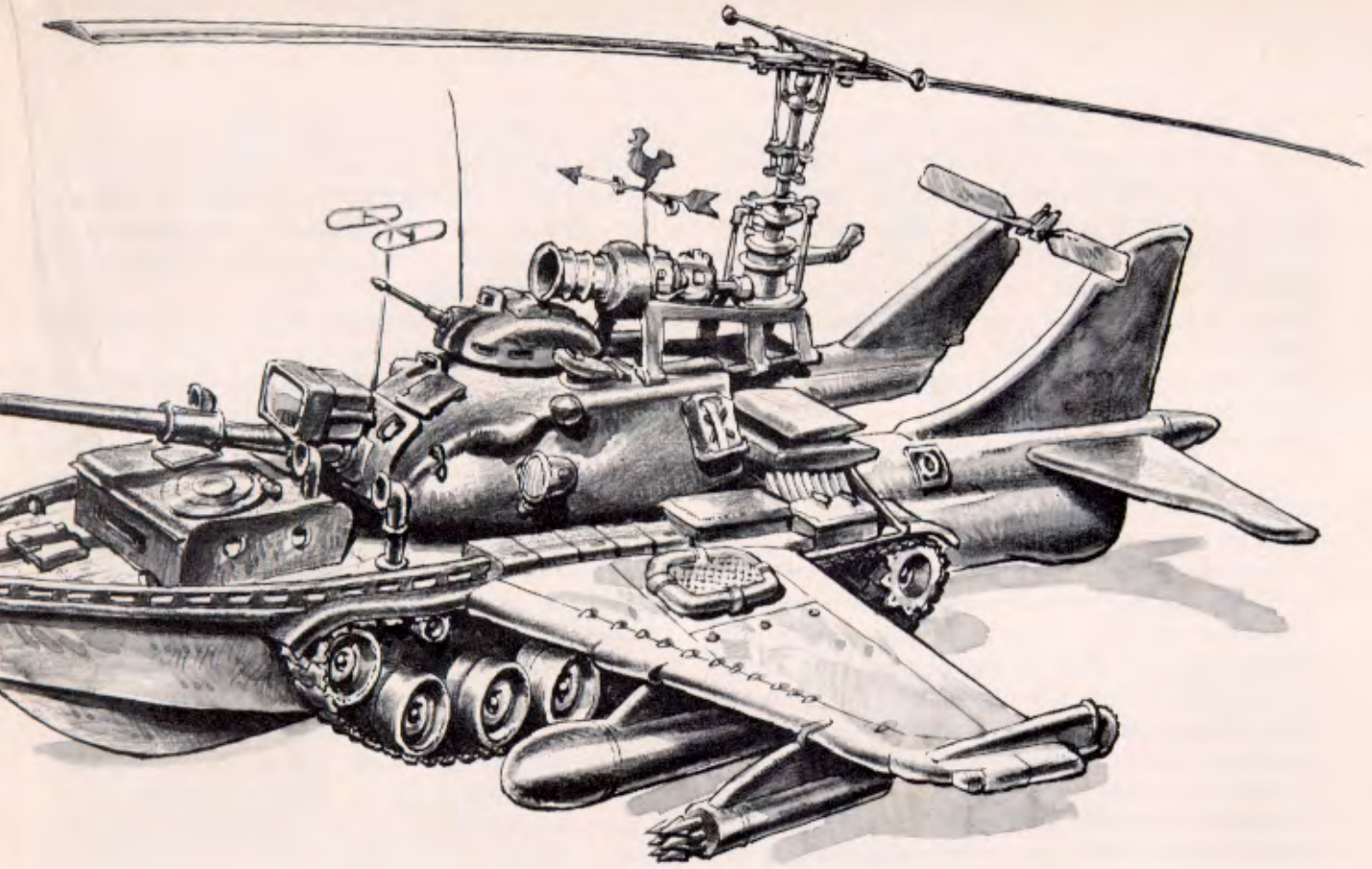
The terms "user" and "producer" generally are well known. However, when applied to the development and acquisition of systems and equipment for multiservice use, they often take on different shades of meaning. For example, in the Navy, The Chief of Naval Operations is considered the representative of the user, and the Chief of Naval Material is considered the producer.

User-producer relationships in the Army are not quite so clear-cut, since there are several Department of Army-level staff agencies concerned with end item usage. Three Army elements share the principal concerns of the producer: the Deputy Chief of Staff for Research, Development and Acquisition; the Deputy Chief of Staff for Logistics; and the commander of the Army Materiel Development and Readiness Command. The Surgeon General and commander of the Army Security Agency fall into this category also.

In any acquisition and especially in the development and production of a multiservice item of equipment, there is a complex interweaving of concern between users and producers. For simplicity's sake, let us explore the concern that exists between the logistician, representing the user in the field, and the designer, representing the producer, usually a contractor. In a multiservice acquisition, one point that must be made clear is that the initial burden of effort rests with the user. A productive user-producer dialog may never become possible unless the user's requirements are made manifestly clear and are included in equipment specifications, statements of work, requests for proposals, contract data requirements lists, and, finally, in the resulting performance contracts.

When practices unique to a single service are used to acquire an item of equipment for use by the joint services, numerous and complex problems arise that affect the user-producer relationship. A common problem in most multiservice acquisitions is the language barrier. The different services and agencies speak different dialects of *Pentagonese*. As the number of participants in the acquisition process increases, there is a corresponding acuteness of this problem.

Language problems that are not solved early in the acquisition phase are easily transmitted through the procurement process to the equipment manufacturer. In turn, if the manufacturer does not understand the particular dialect of the contract doucments and he is thus unable to translate it into his own industrial language, the chances of error, misunderstanding, change, and cost growth begin to rise. While a solution to this kind of problem may appear simple, it is often very difficult for those who must find and implement it.



Much work remains in the area of standardizing logistics and materiel acquisition terminology.

Perhaps a good user-prodcer relationship begins even before there is an equipment specification or a request for proposal. It starts with the development of a joint operational requirements document. This document provides the base from which other user-producer documents emanate. The requirements of each potential user must be accounted for in a multiservice acquisition. If all the users' needs are alike or at least similar, then the task is relatively easy. The more dissimilar the needs of the services and agencies that will ultimately own and operate the item of equipment, the more difficult the acquisition tasks become.

In a specific multiservice acquisition, a responsible project office is established in one of the military services. This office then acts as the architect for the item or system. The project office is thus responsible for the task of translating broad logistics parameters inherent in the joint operational requirements document into meaningful quantitative and qualitative measures for inclusion in equipment performance specifications.

Extensive coordination is essential during the development of the specifications to insure that all parties concerned have clearly understood and interpreted the requirements of the using services and agencies. These requirements must be explicitly stated.

In the final analysis, the specification for the equipment is probably the most important document that emerges in the user-producer relationship. Empirically, it is in this process that the Government most often fails to "say what it means, and mean what it says." The old story of a specification merely being a cut and paste of an old one for a similar piece of equipment is not new. This process may sometimes suffice in a single service acquisition. However, there are several reasons why it usually fails to meet the requirements of a multiservice acquisition.

One reason is the inability of the other interested services to understand the acquiring service's dialect and be assured that their requirements as stated in the approved joint operational requirements have been properly translated into the specification. Another reason is that user requirements may not be clearly spelled out. A solution to this problem is a line-by-line review of the specification by each concerned service, reading for clarity, brevity, accuracy, and understanding, as well as for inclusion of all requirements. This is essential for a specification to be uncluttered, clear, and understandable. If such a document can be produced, the user-producer relationship has a firm basis for growth.

Note that the last statement said, "If such a document can be produced." The culture of the bureaucracy that prepares these documents appears to be the principal impediment to such an effort. The reason is, "We never did it that way before." The user must actually force his way through the maze of the acquisition process if he is to determine the specifications for a particular item of equipment. Specifications that contain, among other things, the nine elements of integrated logistics support, configuration management data, management information systems, design-to-cost data, and life cycle cost requirements tend to crowd out the actual quantitative, qualitative requirements that the hardware must meet.

Certainly all of these items have an important place in the acquisition process, but the equipment specification is not the place for them. If they are allowed to remain there, each time the cost of supporting requirements changes, there is the possibility of an expensive engineering change proposal. Engineering change proposals can also be the harbinger of problems between the user and the producer.

Clutter in a specification is bad. Worse still are statements that lack clarity or necessary specifications that are omitted altogether. In a recent proposal evaluation, an evaluator was overheard to say, "How in blazes could a contractor propose such a stupid response?" When the specification was checked, the requirement was found to be so poorly worded that it did not convey the user's need, even to the evaluator who knew what was required. In fact, the contractor's response was not stupid but was a reasonable response to a poorly described requirement.

Never omit stating a requirement for brevity's sake. User requirements sometime fall through the proverbial crack because, in the rush of meeting the deadline imposed upon acquisition teams, the specification is often not reviewed by the right people. This means a line-by-line, first-page-to-last-page scrutiny by the writer, the writer's boss, the boss' supervisor, and the supervisor's supervisor. A large cast of supporting reviewers—the logisticians, the specialty engineers, and the management experts—should give the draft specification the same carefully detailed examination. It takes an extremely comprehensive review to uncover the disconnects in a major acquisition. Finally, each using service must once again insure that the document clearly reflects its needs. If all of the experts give the specification document the careful scrutiny it deserves, it is likely that important items will not fall by the wayside.

In the stormy world of reality, a specification does not go from the user to the producer by itself. It is accompanied by other important procurement documents that require and deserve the same exacting review, usually by many of the same people who reviewed the specification. Among these documents are the statement of work, the contract data requirements list, and the request for proposal.

The contract and statement of work are important documents for the producer. They tell him what tasks he must perform. If these documents state, as many actually do, "develop and produce the AN/ABC and associated support," there is a great deal of room for difference of opinion as to what, in fact, the producer is required to do. On the other hand, if the user spells out what tasks are required in sufficient detail in the statement of work and uses separate contract line item deliverables to show the producer what he is to provide, another barrier to a meaningful user-producer interface is torn down. By using separate contract line items for each and every item required by the user, several advantages are gained for both the user and the producer.

Thus the producer knows exactly what is required and he can respond. This is important because serious bidders, who must bear the cost of a proposal response, desire to be as responsive as possible. The potential producer can price out each separate line item, even if it is only a budgetary estimate.

Such actions also benefit the user. He is able to gain instant visibility over the total cost of the acquisition including the initial logistics support. More importantly, he can program or set aside the funds he will need to pay for the total acquisition: the hardware, the software, and the associated logistics support. If some of the deliverables that the "user always gets" appear to cost more than they are worth, they can be deleted on an item-by-item basis. There will be no necessity to renegotiate the total procurement price as there would be if every deliverable were buried in a single price.

The important lesson here is that all procurement documents must be reviewed simultaneously and compared with the specification or they will not track. If they are not reviewed in this manner, the user-producer relationship is threatened by the possibility of ambiguity and error. These, either singly or in concert, can spell the death of a brilliantly conceived project. ALOG

Lieutenant Colonel Donald M. Keith is director of the national maintenance point, U. S. Army Security Agency Materiel Support Command, Warrenton, Virginia. Mr. Charles A. McCarthy is assistant deputy director for logistics management in the Joint Tactical Communications Office (OSD).

'Roadeo'

Getting the right supplies and equipment to the right place at the right time is an axiom of the logistician. The accomplishment of this objective often rests on the skills and abilities of the transportation vehicle operators, and their preparation is highly important.

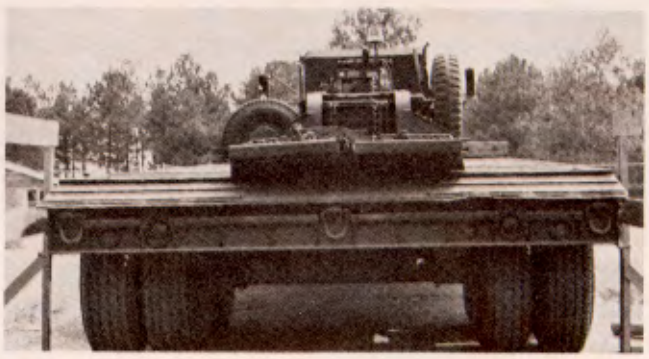
The 1st Corps Support Command at Fort Bragg, North Carolina, has found one medium that provides necessary training with a refreshing element of competition—a drivers' "roadeo." Sponsored quarterly, this popular contest pits the skills of one logistics unit against another and teaches the individual driver the capabilities and limitations of his vehicle.

At a glance, the "roadeo" seems to be a simple obstacle course, and naturally, rows of barrels outline a twisting serpentine path. However, simulated docks and alleys force the driver to parallel park, maneuver in diminishing clearances, drive in a straight line, and stop within inches of a barricade. A written test is incorporated into the competition, covering rules of the road and safety information.

All sizes and types of vehicles are included, from jeeps to 10-ton tractor-trailers. Scoring need not follow any strict order, but time and accuracy are obvious factors. The nature of the "roadeo" allows for a great deal of improvisation.

The challenge of the "roadeo" can be a great stimulant to the unit and the individual. It is an entertaining and effective learning experience for some very important logisticians. ALOG

☐ Tightly spaced barrels prepare the driver for maneuvering in difficult stiuations.



☐ Backing a 10-ton tractor-trailer into this simulated dock area is a demonstration of real skill.

☐ Drivers are scored according to their ability to judge critical inches of space.

Improving Hospital Logistics Support

by Wilbur J. Balderson

Centralized distribution is the key.

A different concept of providing logistics support in hospitals is evolving. It places all health care facility logistics responsibilities in the hands of resident medical logisticians, freeing patient-care personnel to concentrate on their primary missions.

The concept is being used in part in several hospitals in the United States, and will be completely installed in the new hospitals, Walter Reed Army Medical Center and Eisenhower Army Medical Center.

In accord with the concept, the title of supply and services division has been changed to logistics division to better describe the combined functions of supply, maintenance, and service. The division chief will be responsible for all logistics operations in the hospital and all satellite health care facilities.

The logistics division will provide most patient care materiel to points of need and will return unused and soiled supplies to storage or disposal areas. All organizational elements of the medical facility will use the division's storage and distribution services.

Commercial, prepackaged, and sterilized items requiring no processing before use will be issued by the logistics division. A stock of reusable items similar to each disposable item will be maintained by a central materiel service to continue a training base and to afford support in emergencies.

The categories of materiel to be handled by the logistics division are food, linens, medical and nonmedical supplies, medical and nonmedical equipment, mail, flowers, medical records, waste, and general supplies and forms.

The logistics management system involved in the concept will provide for the timely distribution and collection of this materiel on an around-the-clock basis. The system will be flexible enough to adapt to future changes in materials-handling techniques, and it will offer backup modes of operation that can be used during a component breakdown.

The system will employ a number of methods of moving materiel to and from using units.

Medical and general supplies will be transported on mobile supply carts or in mobile supply lockers, and linens will be transported by mobile linen carts or lockers. Patient meals will be transported in mobile food carriers.

Battery-powered mobile equipment dollies will be used to transport equipment. Manually operated platform trucks will be used when battery-powered dollies aren't available.

An automatic box conveyor will transport specimens, X-ray film, records, and small quantities of linen, supplies, and food in emergencies. Stations for the conveyor system will be located in the materiel distribution center and in the supply area of each using unit. A special delivery service will provide a backup system and will be used when an automatic box conveyor isn't available.

Pneumatic chutes will be used to transport waste and

soiled linen to central trash and soiled linen bins. Entrances to the chutes will usually be located in separate color-coded rooms on each floor of the hospital or medical facility. Mobile carts or lockers will be used to transport waste and soiled linen when pneumatic chutes aren't available.

All mobile carts, lockers, carriers, and dollies will be moved between floors on an automatic container conveyor or service elevators. When service elevators are used, carts, lockers, carriers, and dollies will be moved to the extent possible on the floor on which the materiel distribution center is located. Doing so will reduce congestion on the floor of the using unit.

Complete cross-contamination barriers will be provided by using enclosed carts and lockers and suitable protective covers for open carts. Solid waste and soiled linen will be placed in bags or containers at the collection site to avoid microbial dissemination into the environment. Contaminated linen will be segregated from other soiled linen and placed in color-coded water-soluble plastic bags.

One resident logistics manager will be assigned to each patient care floor. The managers' duties will include supervising all logistics technicians under his jurisdiction, determining materiel needs, maintaining custody of property, and acting as liaison with the professional staff located on the floor.

Logistics technicians will be assigned to individual using units if the workload exceeds the capabilities of the resident logistics manager. Technicians will perform quality control tasks, stock supplies, retrieve materiel and waste, and supervise the maintenance of a clean and orderly environment for patients.

The materiel distribution center will provide a single source of supply for most items, expertise in materiel movement, an optimum materials-handling system, a transportation schedule causing minimum interference with personnel movement in corridors, and scheduled materiel delivery and retrieval.

All materiel except food service supplies will enter the facility through the materiel distribution center. Supplies will be delivered from the warehouse in intermediate or individual containers with all unnecessary outer cases, cartons, and other containers removed. Equipment will be delivered from the warehouse in a completely clean and operable condition.

Linen will be provided to the health care facility by the laundry. Linen packs will be contained in plastic wrappers to reduce contamination and pilferage. One type of pack will consist of all linens required to support one patient. A water-soluble plastic bag will be included in each linen pack, to be used in retrieving comparable soiled linens. Linen packs will be assembled in the clean linen section of the materiel distribution center when this service can't be provided by the laundry. Disposable linen items may be substituted in accordance with regulations.

All supplies received will be transported from the loading dock to the receiving area by conveyor and visually inspected for quality and quantity of individual packages. Equipment will be checked only for quantity and delivered to the maintenance area of the logistics division.

All new equipment will be thoroughly tested and rendered operable within the maintenance area. Unsatisfactory items will be reported to the chief of the logistics division for remedial action.

Quantities of supplies necessary to sustain operations between resupply cycles will be stored in a revolving storage bin conveyor or on open wire rod shelf units in the materiel distribution center.

Duty uniforms for which hanger service is provided will be stored on a mechanized clothing storage rack in the materiel distribution center. All other duty uniforms will be supplied on an individual bundle basis and placed in a revolving storage bin conveyor or on open wire shelf units.

Equipment will be stored in the equipment storage section of the materiel distribution center or the central materiel service under the control of the chief of the logistics division.

At each using unit supply area, a prestocked mobile supply cart or locker will be exchanged daily for the identically supplied cart or locker used the previous day.

Each cart or locker will contain a 24-hour supply of all available items for which a need is anticipated. About an hour is required to exchange 20 manually transported carts or lockers. For each stocked cart or locker a backup cart or locker for emergency use will be maintained in the materiel distribution center. In certain instances the exchange of carts or lockers may be accomplished less frequently than daily, and stock amounts will be adjusted accordingly.

Accountability for materiel on stocked carts and lockers will remain with the logistics division chief. Only the items restocked on these carts or lockers will be recorded on a simplified issue summary form as having been issued to the using unit.

Completed issue summary forms will be reviewed by resident logistics managers and using unit operating personnel to determine changes required in items and quantities stocked. The forms will be forwarded to the property management office monthly to support supply and financial records.

Mobile linen carts or lockers containing 24-hour supplies of linen packs will be transported to using unit supply areas and exchanged in the same manner as supply carts or lockers.

Medical records, mail, flowers, and urgently needed supplies that aren't available in the using unit supply area will be delivered by automatic box conveyor or special delivery service.

Patient garments will be supplied by materiel distribution center personnel. A representative of the admission office will report the size of each garment required and the ward to which each patient will be assigned. The need for stocks of patient garments at using units will be eliminated.

Materiel distribution center personnel will transport food from the food service division to using unit food service pantries. Food service personnel will transport patient meals to each bedside.

Equipment and office supplies will be delivered to using units when requested by resident logistics managers.

Materiel for use in the surgical suite will be delivered directly from the central materiel service. Materiel distribution center personnel will deliver these supplies when a conveyor system doesn't link the central materiel service and the surgical suite.

Drugs will be issued to the central pharmacy and then distributed to satellite pharmacies as required. Both the central pharmacy and its satellites will dispense drugs to using units. They will also mail drugs to outpatients when appropriate.

The prestocked mobile supply cart or locker stored in the using unit supply area will be used by the resident logistics manager or a logistics technician to transport materiel to each patient's room to stock each

□ Prestocked mobile lockers will be exchanged daily at each unit supply area.

patient cabinet. The mobile linen cart or locker containing clean linen will be used in the same manner. These actions will be accomplished daily, usually during the evening shift. A quantity and quality inspection of supplies and linen packs will be made at that time. A quality inspection of individual linen items will be made by using unit personnel when linens are changed.

Additional supplies and linen required for emergency patient care will be stored on open wire shelf units in using unit supply areas. These items will be delivered by the resident logistics manager or a logistics technician upon the receipt of a request from operating personnel.

Office supplies will also be stored on open wire shelf units in the using unit supply area and will be issued on a self-service basis.

Materiel shortages and unsatisfactory item quality will be reported to the resident logistics manager. He will then take remedial action in conjunction with the materiel distribution center chief.

Mobile carts and lockers and mobile treatment equipment requiring cleaning and sanitation will be processed in a cart washer and dryer by logistics division personnel. Cleaned carts and lockers will be returned to the materiel distribution center, and cleaned mobile treatment equipment will be transferred to the maintenance area of the logistics division.

Serviceability inspections and necessary maintenance will be performed on all equipment returned from using units. Items that can't be repaired by maintenance

area personnel will be sent to the maintenance shop. Serviceable equipment will be delivered to the materiel distribution center or equipment storage section after maintenance actions are completed.

The audiovisual system within the health care facility will provide a means of direct communication between the nursing station and the supply area of each using unit and the materiel distribution center. A transfer switch will be included in the intercom to route calls from a nursing station directly to the materiel distribution center when the resident logistics manager or logistics technician concerned is absent from the supply area. Requirements for materiel other than that included on standard carts or lockers will be reported to the chief of the materiel distribution center via the audiovisual system.

A supervisory display panel in the materiel distribution center will permit central monitoring of the entire automatic box conveyor system.

A closed circuit television monitoring system will allow materiel distribution center personnel to centrally control cart, locker, carrier, and dolly movement within the facility. The system will permit the rerouting of transporters when necessary to expedite delivery to using units and to avoid congestion at elevator entrances.

A central property record will be maintained by the property management office of the logistics division for each medical or nonmedical nonexpendable item in use. Expendability of medical equipment is based principally on a $200 unit cost criterion.

The central property record will provide such information as stock number, unit price, date placed in use, life expectancy, date each maintenance inspection is performed, and cumulative repair or modification costs. In short, the record will provide the complete history of an item and a schedule for its periodic maintenance and eventual replacement.

☐ Mobile carts provide an alternate method of transporting and storing linen and supplies.

The location of nonexpendable items, other than mobile treatment equipment, will be recorded on the appropriate central property record. The location of all mobile treatment equipment will be recorded at the materiel distribution center. A record of the temporary location of these items on loan to using units will be maintained on an equipment control board in the materiel distribution center.

The custody of all equipment in use will be the responsibility of the appropriate resident logistics manager. No hand receipts will be required. A list of all equipment reflected on central property records as in the custody of a resident logistics manager will be prepared annually by the property management office. This list will be verified during a physical inventory conducted by an officer appointed by the health care facility commander.

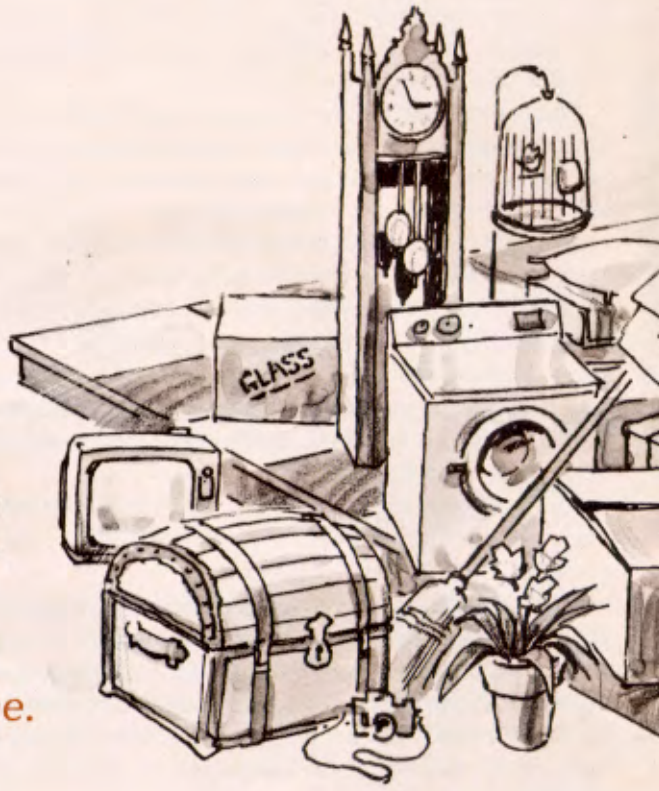
Resident logistics managers and logistics technicians will assure that all materiel is properly safeguarded and that all personnel exercise appropriate control of supplies within using units.

To insure proper operation of the logistics management system, the logistics division chief will continually instruct personnel to familiarize employees with their duties and provide the information necessary to maintain a high degree of proficiency.

In planning the improved distribution of materiel within any health care facility, variations in the detailed procedures of the system must be evaluated to determine the methods that will be most effective, efficient, and economical. In some instances it may be beneficial to keep carts or lockers at the using unit and replenish them on a scheduled basis from a distribution cart containing bulk stocks. In other instances carts or lockers may be returned to the materiel distribution center, replenished, and then immediately returned to the using unit.

Regardless of the particular application employed, the system will function only if resident logistics managers develop close working relationships with professional using unit personnel, and if the chief of the logistics division performs routine liaison throughout the facility. Doing so will insure that the total needs for the full support of all personnel concerned with patient care are met effectively. ALOG

Mr. Wilbur J. Balderson is presently the deputy chief of the Logistics Division, Office of The Surgeon General, Department of the Army.



It's Your Move!

A new Army policy can put you a jump ahead in the moving game.

Did you dread your last move from one duty station to another? Were your worst fears confirmed when your household goods arrived at your destination late or in poor condition? Did you think you could do it better yourself?

Well, now you have that chance. The Army has established a do-it-yourself program as an option in addition to the standard Government-bill-of-lading move.

Under this program, in effect throughout the continental United States, you can be furnished a rental truck or trailer and packing material at Government expense. The advantages are obvious because you have complete control over the packing, loading, and moving of your belongings.

When you have received your travel orders, you may elect to use the do-it-yourself program. Of course, this type of move must prove to be cheaper than a conventional commercial move. A test of the program resulted in savings of over $73,000 in 217 moves.

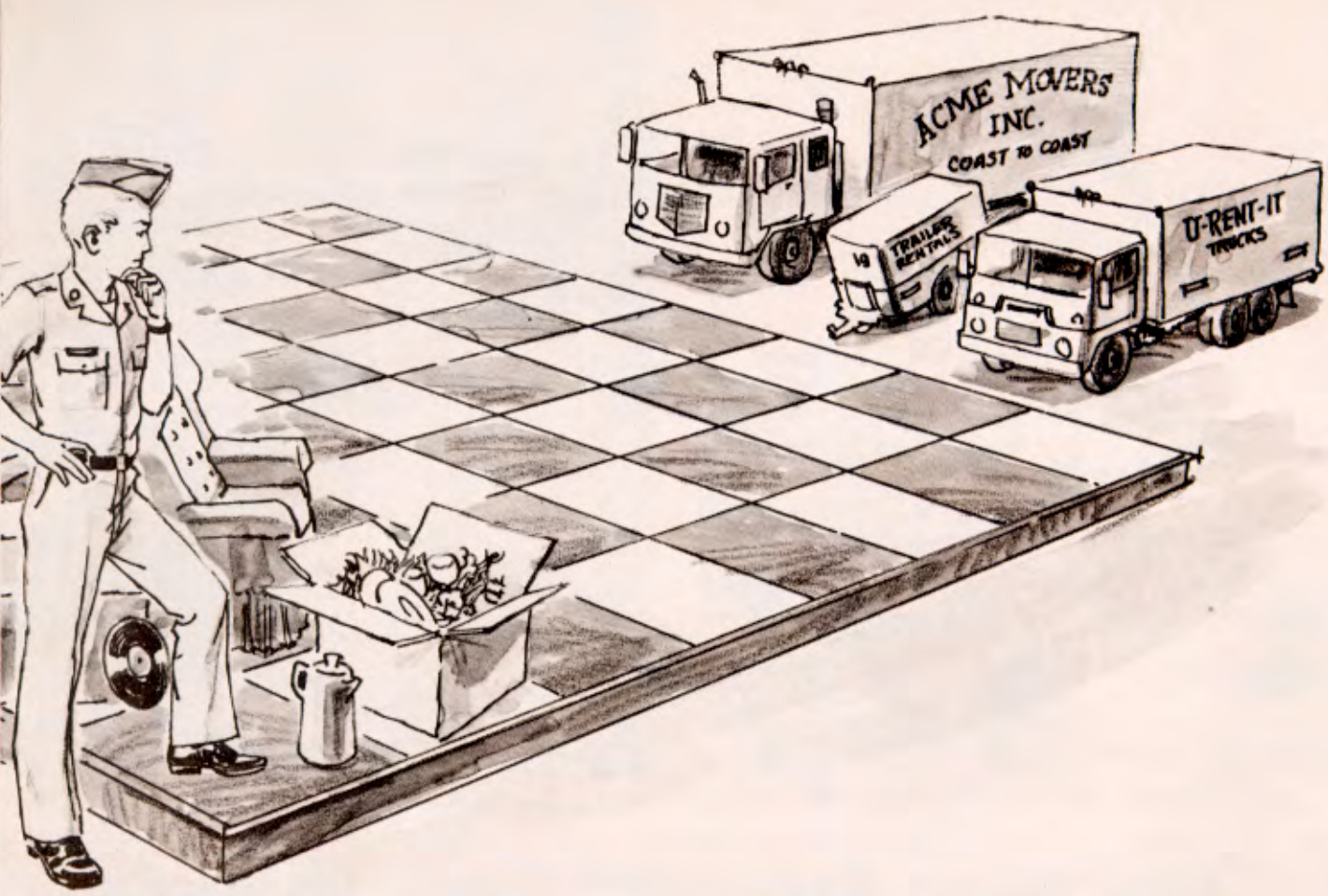
Requests for a do-it-yourself move should be submitted to your local transportation office. Counselors in the personal property section of the transportation office will help you determine what size of truck or trailer you need and will estimate the amount of packing material required. Counselors will also discuss your responsibilities and entitlements, as well as those of the Government and the contractor.

Packing materials can be picked up from the designated contractor before the move. Reimbursement for labor costs for assistance in moving is authorized in reasonable amounts.

When a truck to be used for a long-distance, intercity move is picked up, an operating allowance for gas, oil, tolls, weight tickets, and special permits is furnished by the dealer. A full tank of fuel is also provided. There is no operating allowance for trailers or for local truck rentals. Local moves are limited to 48 hours with no mileage limit.

Loading help is payable at the prevailing wage and is reimbursable. Excessive or professional labor wages are not considered for payment, and your personal labor and help from immediate relatives is not payable.

Once on the road, extra fuel for the rental truck is purchased with money from the operating allowance. There is no specific requirement to reconcile the operating allowance expenditure, but you should retain receipts for expenditures in case a question should arise when the vehicle is turned in.



You may also request travel allowances for yourself and your dependents on your arrival at the new station. You are authorized 8 cents per mile. Dependents over 12 years old are reimbursed at the rate of 7 cents per mile, and those under 12 but over 2 years of age rate 3½ cents per mile. These rates apply only if the claimants travel in the rental truck or a privately owned vehicle. There is no mileage allowance if the move is local.

Privately owned vehicles may be towed by the rental truck, but the truck must be at least 16 feet long. You are responsible for all costs and arrangements for the towbar and towing lights.

When using trucks or trailers for intercity moves, the allowable time and distance of use is determined by the official table of distances and adding either 15 percent or 50 miles, whichever is greater. If you exceed the allowed mileage, you must pay the contractor at the destination for any overage.

If your truck breaks down or becomes inoperable, the contractor in the nearest city will provide emergency road service. If the vehicle is beyond immediate repair, a replacement will be sent and assistance furnished to transfer the load from one vehicle to the other.

Insurance is provided by the contractor, and the Government insures your household goods for $15,000. You must prove that any damage to your property was not your fault if you have a claim against that insurance.

If it is decided that a trailer will do the job, make sure that your vehicle can accommodate a trailer hitch. If your car cannot use a temporary hitch, you will have to buy a permanent ball-type hitch at your own expense, without reimbursement. If you already have a hitch, it can be adapted, at Government expense, to tow the trailer. You must pay the extra insurance if a rental trailer is not covered by your auto insurance. This cost is not reimbursable.

Weight is an important factor in the do-it-yourself move. The Joint Travel Regulations base weight entitlement by rank. For example, an E4 with less than 2 years of service is allowed a gross weight of only 225 pounds. Since the smallest sized trailer holds over 600 pounds, he could be charged for the capacity weight. Excess weight costs are the soldier's responsibility. The weight ticket is your only proof of moved weight—Keep it!

The next time you move, consider the advantages of the do-it-yourself program. It could make your change-of-station experience more pleasant. ALOG

A dining facility manager checks in at Fort Carson's

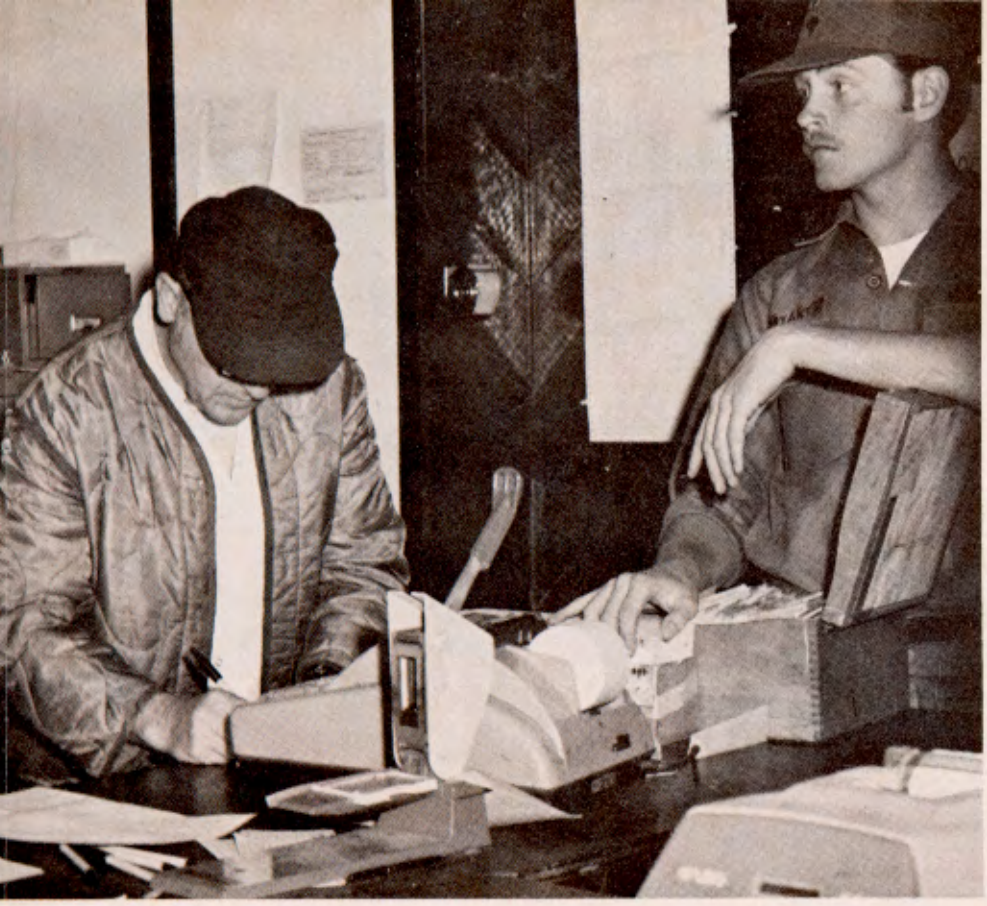
The 'Mess Sergeant' Goes Shopping

by Captain John M. Campbell

There have been times when the phrase "good ole Army chow" had bad connotations. No matter how much a soldier griped about working conditions and sleeping accommodations, he invariably griped more about food in the old Army messhall. Then came the big change. When the Modern Volunteer Army concept came into being, a major effort was made to improve Army food and dining facilities.

Changes have been numerous and frequent in Army food service. The separation of commissary operations from troop issue is a current one, and others are proposed that will further alter the way of doing business. An Army food service improvement goal is to serve high quality, appetizing meals made up of foods soldiers prefer. To achieve this, much has been done to include highly acceptable foods in the master menu. It was soon discovered, however, that the key to success is the competent "mess sergeant" who has authority to select foods his diners like and in the quantities they will consume.

This is the story of one post's innovations to the Army Ration Credit System that help achieve improved food service for its troops. The Army adopted the system to provide the "mess sergeant" the latitude he needs in food selection. The old ration issue system was based on the concept that food was requisitioned by the meal from the master menu. The commissary then accounted for food costs on one account record. The system made it difficult for the "mess sergeant" to adjust menus and provided little information on the effectiveness of his food management.



"troop issue support agency."

With a shopping cart a bit larger than the ordinary supermarket cart, the manager selects his "groceries."

Sales store clerk checks purchases on a computer card.

The Army Ration Credit System eliminates many of the deficiencies of the old system. It allows the dining facility manager (formerly the mess sergeant) to increase, decrease, or delete the quantity of food items programed for issue in the master menu or to substitute other food items. The credit system requires the commissary officer to maintain a separate cost account for each unit, thus providing a way to assess management effectiveness.

The Army Ration Credit System, implemented under AR's 30-1 and 31-200, allows the dining facility manager increased flexibility in selecting the kinds and quantities of food he requires, but it fails to eliminate the leadtime required by the commissary for requesting food items. The system still requires the dining facility manager to forward a copy of the Subsistence Report and Field Ration Request (DA Form 2970) to the commissary officer from five to seven days in advance of the issue. The commissary officer then prepares a Field Ration Issue Slip (DA Form 3294-1R) and gives a copy to the dining facility manager. He must then annotate the food items and the quantity he needs on the issue slip and return it to the commissary officer at least three days before the issue date.

The added flexibility provided in the Army Ration Credit System is bought with the price of added paperwork and time delay that threatened to make the credit system as cumbersome as the one it was to replace.

An innovative approach to the system was taken by the commissary officer of Fort Carson, Colorado, when he realized that the ration issue cycle could be further simplified by a slight modification in the procedures. Recognizing that unit strength fluctuations seriously impaired the dining facility manager's ability to forecast food needs, he decided that shortening the leadtime was one solution. This would reduce food waste and minimize emergency requisitioning. It was decided that the best way to shorten the leadtime was to allow the dining facility manager to do his own shopping, at his convenience.

If this could be done, then there would be no need to request rations in advance, no need to prepare a Field Ration Issue Slip, and no need for a ration breakdown point.

To allow the "mess sergeant to go shopping," a Fort Carson "troop issue subsistence activity" for perishable and nonperishable foods was established to "sell" foods to dining facility managers. These managers can now shop in the store each working day or as often as necessary to prepare the menus that the diners prefer.

The troop issue activity established control and accounting procedures that operate this way. Each unit or dining facility has its own identification code and is furnished with an 80-column tab card with the unit identification. Each unit furnishes the activity a Delegation of Authority (DA Form 1687) naming the persons authorized to shop there. When a shopper enters the store, he must present his identification card which is checked against the unit's delegation of authority form to insure that he is an authorized shopper.

It's checkout time; but here the computer takes care of the bill.

The store uses a tally register to record the entry of an authorized buyer. It reflects the time and date of entry, number of items bought, and total quantity. Each shopper is required to sign the register as he leaves the store. The register becomes the signature document for issues.

As the dining facility manager or his authorized representative shops, he will find a stack of cards beside each item stack. The card identifies the item. He takes a card for each of the various items that he buys. When his shopping is done, the items bought and the cards are taken to the checkout point where the items are counted and weighed and the quantity of each is annotated on the item card. Each card is initialed by the shopper, indicating receipt, and the items are then loaded on a vehicle for delivery to the shopper's dining facility. Store personnel enter the total number of items received on the tally register, the shopper signs the register and receives a copy of it, and the transaction is complete.

At the end of the day, all batches of cards, along with the tally register, are taken to the commissary officer who checks the cards against the register. The cards are then taken to the machine room for key punching of the unit identification and quantity. A machine listing is then prepared that shows the unit price, quantity, extended dollar value for each item, and a total dollar value of the complete purchase. Copies of the prepared listing are provided to the unit and to the food adviser, when required. The commissary office copy is posted to the unit's account card.

On Monday of each week, the unit submits Fort Carson Form 147, reporting the actual feeding strength for the previous week. The commissary office takes this report and mechanically produces a listing showing the dollar value authorized for the period reported. This figure is posted to the unit's account card and the unit's status is determined. The unit is notified of its status by "DF."

At the end of each month, a final balance of the unit's account card is made and that data is entered on a consolidated summary which, in effect, replaces the cumulative summary of field rations issued. The summary is used to prepare the statement of reimbursable issues.

The same basic procedures are followed for dining facility managers of the Army National Guard and Army Reserve units, except that these managers are provided with a ten-day field training exercise menu and field ration issue slip showing authorized quantities of items to aid them in item selection.

The Fort Carson concept of the Army Ration Credit System is but another innovative approach to improving Army food service to the soldier. ALOG

Captain John M. Campbell prepared this article as a student in the Quartermaster Officer Advanced Course, Fort Lee, Virginia. He is currently a logistics and embarkation instructor with the Landing Forces Training Command, Coronado, California.

Weapon Systems Support Testing

by Lieutenant Colonel William L. Lytle

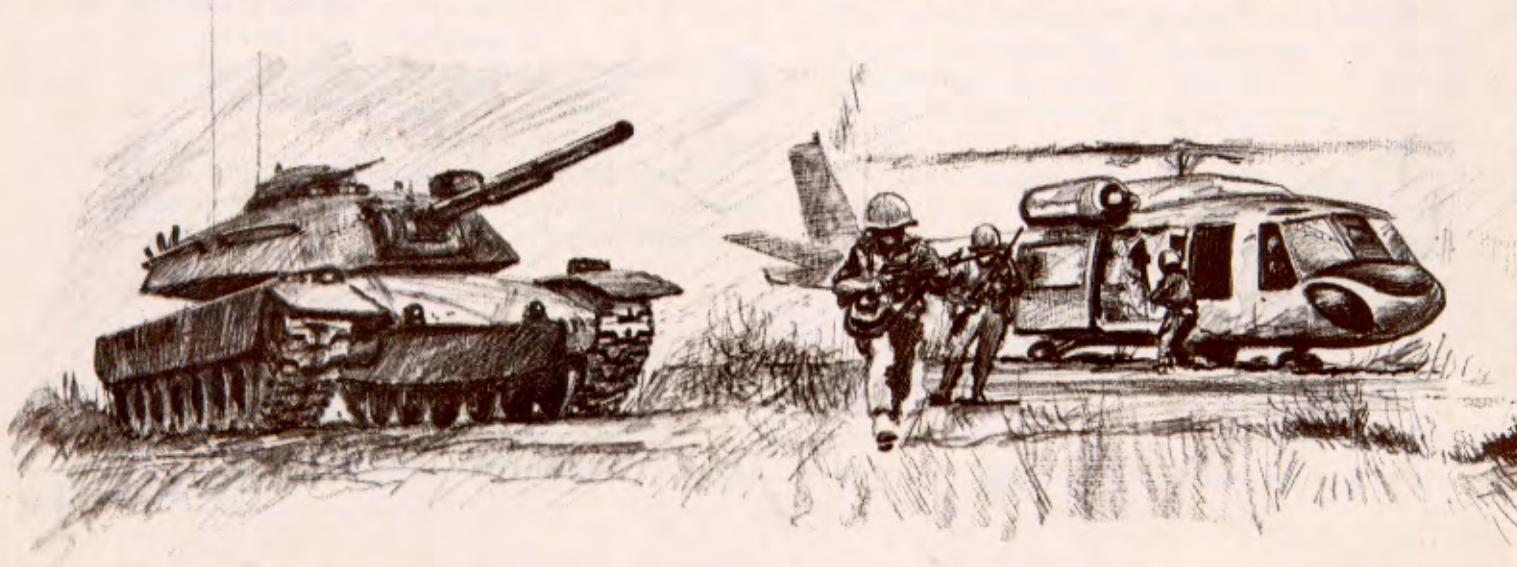
The weapon systems evolution is improving the quality and capability of Army weapon systems and concepts. The Army's "Big Five"—the utility tactical aircraft system (UTTAS), the mechanized infantry combat vehicle (MICV), the advanced attack helicopter (AAH), the surface-to-air missile development (SAM-D), and the XM1 main battle tank—are excellent examples of this evolution. But the evolution of a weapon system can place great stress on its logistics support package. If excessive difficulties in support are discovered in testing, an otherwise excellent weapon system could be discontinued.

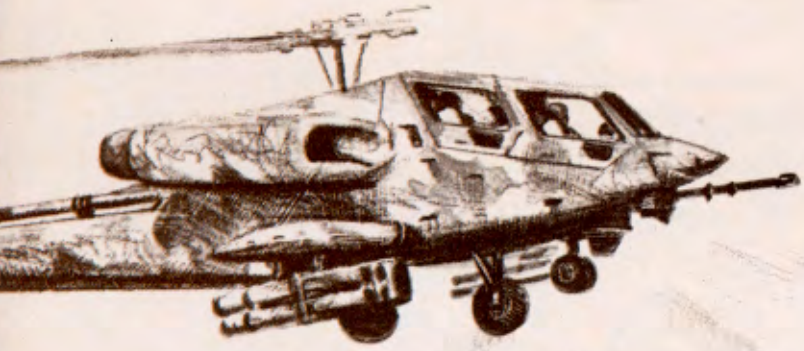
Testing the weapon in operation can determine its utility and suitability for combat use. These operational tests must be made on the entire weapon system, including its logistics support package, since the weapon cannot function unsupported. Every phase of supply is important to the life cycle of the weapon system and to the soldier who operates it.

Typical aspects of the support package include supply, transportation, maintenance, tools, training, and ammunition. Tests must be applied to these components both separately and in combination, and in relation to the weapon system they support. These tests are planned, conducted, and evaluated by TRADOC Combined Arms Test Activity (formerly MASSTER), at Fort Hood, Texas. The logistics aspects of operational tests are a primary consideration of this testing facility.

Transportation is the most basic element of the logistics package, and its implications are obvious. It has an impact on all other phases of the support package, from ammunition to maintenance. Transportability can be the deciding factor in accepting or rejecting a weapon system.

The reliability, availability, and maintainability requirements will be more stringent for future systems than for those being replaced. Fewer maintenance manhours, increased life expectancy, and better staying power on the battlefield are common goals. Reliability, availability, and maintainability requirements should be established before testing, then closely observed to insure that performance standards meet the desired goals.





Tools and testing and diagnostic equipment required for the operation and maintenance of the system should be placed according to deployment doctrine in the test unit and support units operating under field conditions. This "wringing out" process will determine the adequacy of tools and testing and diagnostic equipment. When used with current directives, use data, and authorization documents, the test data will provide an excellent basis for determining acceptance of the support package and the weapon system.

Repair parts are one of the most expensive elements of the logistics support package. Prescribed load lists and authorized stockage lists will not be finalized by operational testing alone, but will be decided after all tests are made. If the operational test is of short duration, extrapolation might be used in the initial parts package decision. Subjecting the test unit to a complete Army training cycle would provide the best repair parts data. Complete records must be kept and analyses made of all repair parts ordered and used by the test unit and its supporting units during the test period.

☐ Dependable logistics support of new weapon systems must be proved before the systems are fielded.

Basic issue items are those required for the system's operation and maintenance and, therefore, must be stowed near the operator. Adequate space must be available to accommodate basic issue items. The operator's evaluations and use data will assist the evaluator in determining which basic issue items are necessary. The question of benefits and burdens usually defines acceptance or rejection of an item.

Publications support the weapon system by giving the operator or mechanic detailed instructions in the operation and maintenance of the system. These publications must be clearly and accurately written. Test and support units may recommend any changes indicated by data collected during operational testing of the system. The weapon system project manager and the logistics evaluator must work closely when changes in a publication are suggested. These changes aid in determining the acceptability of the weapon system.

New weapon systems and modern warfare will impose ammunition requirements on the logistics support system that range from the manufacturer to the user. Ammunition safety and transportability must be considered for storage and containerization. The ammunition basic load must be evaluated during the operational test. Both the test unit and its supporting units should provide ammunition evaluations that reflect the user's point of view. The ability to support the ammunition requirements of a weapon system is a critical logistics question that impacts on the system's acceptability.

The personnel required to support a new weapon system must also be evaluated. The maintenance organizations from depot to unit should provide man-hour data to insure that maintenance personnel can support the system. The test unit and supporting units should provide data pertaining to each military occupational speciality.

A weapon system that requires more support personnel than the one it replaces should be examined carefully by the evaluator. The present trend toward a smaller manpower Army with greater individual effectiveness requires that support personnel be efficiently employed.

Training of support personnel should not be excessive or overly sophisticated. Extensive training time increases mobilization reaction time. There must be an immediate response with the new weapon system if we are called upon to fight. This response must be continuous. Long duration training schedules for support personnel impair the Army's sustaining power and efficiency. Personnel in the test unit and its supporting units should be evaluated according to the training provided to insure knowledge of the weapon system.

A logistics evaluation must compare logistics support packages of systems in use with those of proposed systems. The tooth-to-tail ratio, or the ratio of combat effectiveness to support requirements, should be examined after operational testing is complete.

Logistics aspects of weapon systems like the "Big Five" will be paramount on the battlefield of the future. Testing and proving these aspects today will improve the Army's combat effectiveness tomorrow. ALOG

Lieutenant Colonel William L. Lytle is the commander of the Operational Support Battalion, 13th Corps Support Command, Fort Hood, Texas. He previously served at the Modern Army Selected Systems Test, Evaluation and Review, testing the Dragon antitank missile.

Managing Major End Items

by John P. McCormick

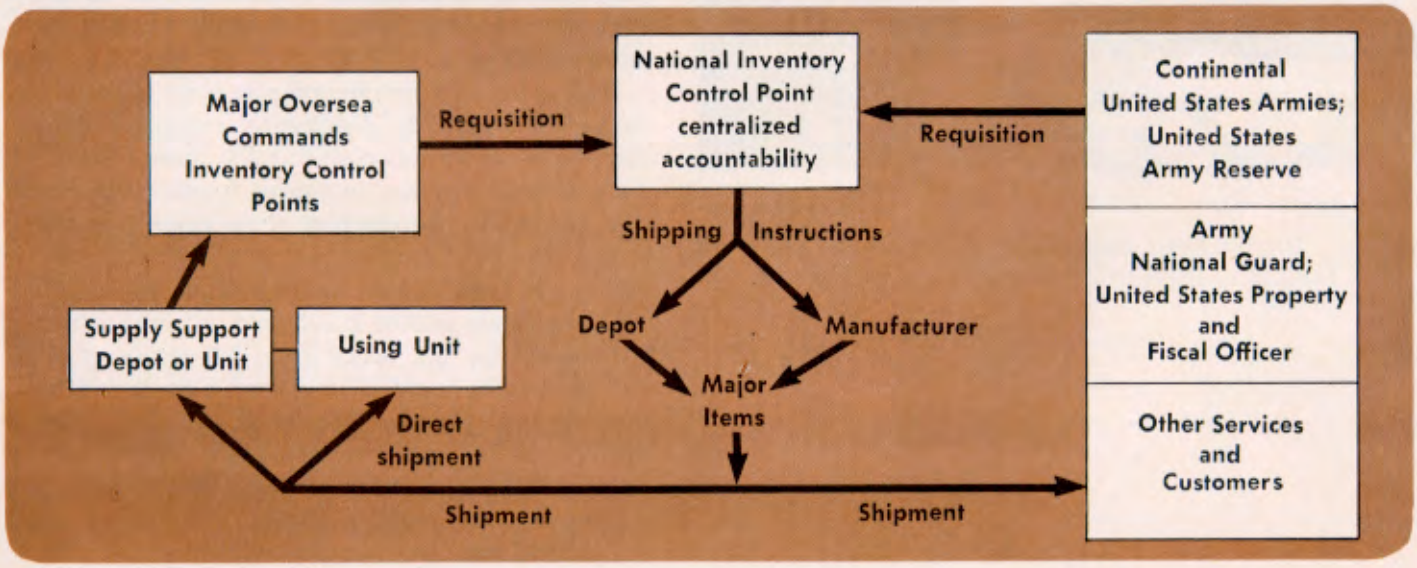
The distribution, redistribution, and disposal of major end items is an important part of the mission assigned the U.S. Army Materiel Development and Readiness Command (DARCOM). By achieving and maintaining the most effective and economic distribution of major end items, the command enhances the Army's readiness posture and ability to support units in the field.

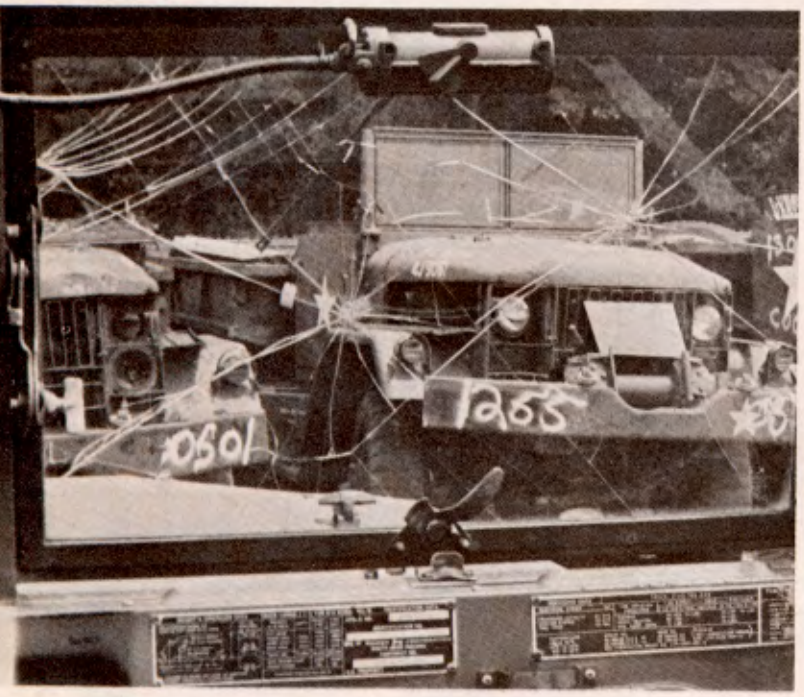
Under the supervision of DARCOM Headquarters, major end items are delivered to customers by national inventory control points located in the five materiel readiness commands. Items are routed to customers either directly from new production or from depots within the continental United States, in accordance with requisitions or supply directives prepared at a national inventory control point. Requirement codes, outlined in AR 725-50, Requisitioning, Receipt, and Issue System, signify that the customer is authorized the item. For example, an A1 code on the requisition indicates that the customer has an initial issue shortage that has never been filled. An A2 code indicates that a replacement item is needed for a major item dropped or lost to the supply system.

The delivery of items is controlled by a system of issue priority designators, established primarily by AR 725-50 and AR 710-2, Materiel Management for Using Units, Support Units, and Installations. A system established by AR 11-12, Logistic Priorities, is used with the issue priority designators to establish materiel issue priorities within the five force activity designator groups. A priority sequence number is assigned to the mission of each group, and the customer's urgency of need is established by the issue priority designator numbering system.

Priorities are assigned by the customer and then are broken into three areas. Area A designates that the

☐ Distribution of major end items.





Major item distribution plans cover an item's life cycle, from initial requirement to ultimate disposal.

Force Activity Designator	Mission	Priority Sequence
I	Combat	1000 Series
II	Operational ready	2000 Series
III	D − Day to D + 30	3000 Series
IV	D + 30 to D + 90	4000 Series
V	Others	5000 Series

Logistics priorities established by AR 11-12.

customer is unable to perform his mission. Area B designates that the customer's mission is being impaired. Area C designates that the customer's needs are more urgent than routine.

In order to insure optimum distribution management and optimum planned distribution, a major item distribution plan is prepared each six months on commodity-managed items, in accordance with AR 700-120, Materiel Distribution Management. The major item distribution plans are initially developed by DARCOM's Major Item Data Agency, supported by data furnished by Headquarters DA, major commands, and national inventory control points.

The plans provide a means of more effectively and more efficiently managing major end items. The plans are designed to cover the equipment's life cycle from the initial requirement for procurement to the equipment's ultimate disposal from the Army system.

Among other applications, the plans are used as the basis for filling requisitions, for determining the Army's logistics capability to support unit actions and war plans, and for determining if redistribution of assets from lower priority claimants to higher priority claimants is justified.

Each major item distribution plan is not an execution medium in itself. The distribution, redistribution, and disposal projections displayed in the plans require the issue of other logistics documents to effect major end item movements. The purpose of the major item distribution plan is to establish control over the supply of major end items and to assure that the best possible Army readiness posture is achieved and maintained.

In order for the major item distribution plan to cover the entire useful life cycle of a major end item, three types of plans are developed.

Category I plans show the initial distribution of newly adopted items and modernized items. These plans are manually prepared, published, and distributed by the materiel readiness commands involved.

A	B	C	(Urgency)
1	4	11	
2	5	12	Noted by
3	6	13	issue priority
7	9	14	designators
8	10	15	

Category II plans show the worldwide status and future distribution or redistribution of major end items currently in the Army inventory. These plans cover items classified "limited production" and "standard." The missile and aircraft major end item distribution plans are manually prepared by the appropriate materiel readiness commands. All other category II major item distribution plans are produced by the Major Item Data Agency using automated systems.

Category III plans are made for "contingency and training" items, washout programs, and excess major end items, to provide an orderly and economical phase-out.

Each major item distribution plan reflects in a single document the total approved peacetime requirements of Army forces and relates those requirements to major commands. The production of a major item distribution plan, which takes about 78 days, is accomplished in three phases.

Phase 1 actions involve developing the detailed and gross distribution requirement data reflected in the major item distribution plan.

In phase 2 of the publication cycle, current and projected assets data are collected and a draft distribution plan is compiled. The primary input files involved in this phase are the computed gross requirements developed in phase 1; the worldwide asset position file; the asset, requirement, depot maintenance, and acquisition file; and the commodity management input data file. The worldwide asset position file provides current asset data. The asset, requirement, depot maintenance, and acquisition file provides a month-by-month projection by the national inventory control points of assets that will become available for issue from procurement and depot overhaul. The commodity management input data file is a card input system generated by the national inventory control points that allows the entry of supply decisions that can't be automatically programed or that will override the machine distribution formula.

In phase 3 of the publication cycle the national inventory control point distribution and redistribution corrective commodity management input data are collected, and the final major item distribution plans are computed and published. The machine output from this operation includes both a printed manuscript and a magnetic tape copy.

Category III major item distribution plans, mentioned earlier, are developed to provide for the controlled, orderly removal from the Army inventory of major end items in a nonacceptable, overage, or excess status. Washout programs are directed by higher authority for older items that are no longer needed and those being replaced by newer items. Washout programs are predicted on age-of-inventory considerations, as well as on fund availability, which determines the rate at which the washout program can be executed.

When a major item is no longer authorized, the customer reports the item as excess through supply channels to the appropriate national inventory control point for disposition instructions. All excess major items, regardless of acquisition cost, age, or condition, must be reported. Before authorizing the disposal of items, national inventory control points insure that the equipment's disposal is in the best interest of the Government. When that is the case, disposition instructions are forwarded, directing the customer to turn the item over to the property disposal office. Designated items are turned in through authorized cannibalization points.

From distribution to disposal, the task of managing major end items is complex. Handling that task effectively and economically is a continuing objective of the Army Materiel Development and Readiness Command. ALOG

John P. McCormick is a supply representative at Army Materiel Development and Readiness Command Headquarters, Alexandria, Virginia.

Long-Term Storage of

Since most munitions are produced long before their ultimate consumption, the storage of ammunition is an important logistics consideration. Equally important is insuring that while in storage the ammunition stays in a usable condition.

The phrase "long-term storage" actually encompasses two phases of storage. First, there is the manufacture and storage of the munitions until they are transported to the Army in the field. Second, there is the transportation and storage of the munitions by the Army in the field until consumed. These aspects of storage and handling must be considered in relation to the design of ammunition packaging.

Most of the Army's conventional ammunition is manufactured in Government-owned, contractor-operated loading plants and shipped from these plants to various storage depots in the continental United States. In this phase of the storage cycle the ammunition is given careful and preferential handling as opposed to the conditions in a theater of operations. Shipment from the loading plant is normally made by rail, and storage is almost universally under warehouse conditions. Obviously, long-term storage is anticipated since Army guidelines specify that ammunition should be able to withstand covered storage for a period of at least twenty years and uncovered storage for ten. This is a far cry from the limited length of storage contemplated for commercial items.

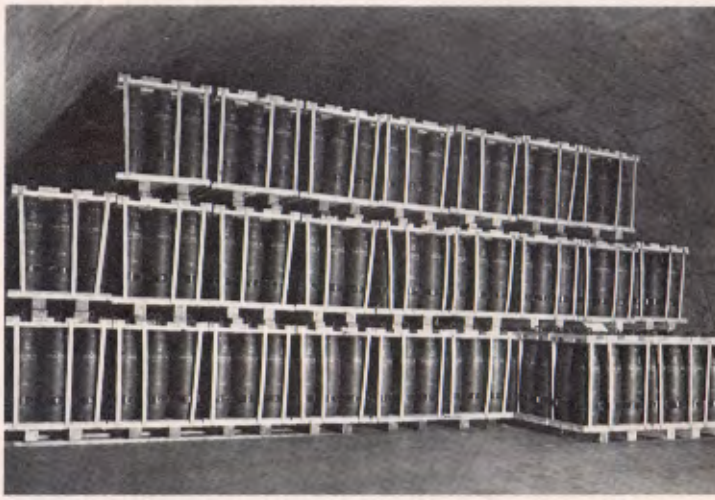
Although many different types of ammunition magazines are prevalent for storage in the continental United States, they may be grouped into a few general classes.

Standard magazines include such storage facilities as the igloo magazine. Igloos are generally constructed of masonry with an arched roof and are earth covered. Additionally, they are provided with ventilators and lightning rods. Although they are not heated, the temperature in igloos in the continental United States averages about 40 to 45 degrees in Winter and 60 to 70 degrees in Summer. Thus, the packaged ammunition is afforded protection from rainfall and excessive temperature fluctuations and is maintained at a relatively stable humidity. Igloos are widely separated to prevent detonation of adjacent storage sites in the event of an accidental explosion in one. Detailed plans are prepared for storage of each type of item within the igloo, with consideration being given to aisle space, accessibility of the stacks, and clearance distances between the walls and roof.

Aboveground magazines are also used extensively. Again, the aboveground magazines are built of fireproof materials and are well-ventilated and widely separated. They also afford protection to the ammunition from rainfall and other climatic conditions and offer some degree of stability to temperature fluctuations, although obviously not as much as in an igloo.

Other types of storage facilities are also used within

☐ Exterior and interior view of an igloo storage magazine.



Ammunition

by Howard M. Weiner

the United States, but, essentially they are variations of the two previously described.

In a noncombat oversea area, storage is generally quite similar to that in the United States, although details may vary depending upon local conditions. However, when ammunition arrives in a combat theater, storage conditions are very different and very severe. Covered storage is the exception, rather than the rule, particularly in the opening phases of a combat operation. The photo on page 36 shows open field storage near Pleiku, Vietnam. Note the exposure of the ammunition packing to the elements in open stack storage of this kind. Ammunition being stored in a forward supply area is a step in the supply line beyond the depot.

As combat operations proceed and ammunition supplies are built up, one can also find roadside storage where the ammunition is stored on the side of the road for easy access. Tarpaulin-covered storage is a luxury usually reserved for a few selected items that are particularly sensitive to weather, such as pyrotechnics, dynamite, and some chemical munitions. The majority of ammunition in a theater of operations is exposed to the elements and it is this phase of the ammunition life cycle with which the packaging design engineer is concerned most.

Packaging must be rugged to withstand the multiple handlings and severe exposure that it will experience in the theater of operations. In addition, other design considerations must be kept in mind. For example, one of the major functions of depot storage is to periodically survey the ammunition to insure that it is usable. This repetitive surveillance process imposes a requirement that ammunition packaging be readily opened and easily resealed. Many depots engage in rework and renovation operations where unserviceable lots of ammunition are made ready for use. This calls for a reusability factor in much of the packaging so that the reworked item, when possible, can be replaced in its original container.

For convenience, the hazards that cause damage to munitions packaging under field conditions can be grouped into two types—those of the natural environment and those of induced environments.

Since ammunition is potentially usable worldwide, packaging designs must be able to run the gamut from 160 degrees Fahrenheit to −70 degrees Fahrenheit for temperature and from 100 percent to 2 percent humidity. AR 70-38, Research, Development, Test and Evaluation of Materiel for Extreme Climatic Conditions, provides guidelines for packaging design to protect from the natural environment. It also specifies other climatic factors such as rain, snow, ice, wind, blowing sand, blowing dust, and atmospheric pressure to be considered in design problems. Obviously, not all conditions coexist in any one climate, but because of

☐ Aboveground magazine ammunition storage.

the possibility of worldwide use, all conditions must be considered.

To insure the ability of packaging designs to withstand the induced environments to which they may be subjected, a set of 20 tests has been developed. Obviously, not every test will be conducted on every container. Only those simulating actual use conditions will be performed on a specific design, although in any test program, tests necessary to cover such field conditions as rough handling, transportation vibration, and stacking will always be run by one procedure or another.

Additionally, other design criteria for field use are pertinent. The Army's Training and Doctrine Command offers generalized guidance to the package designer in such areas as access to package contents without special tools; time limits for opening packages under varied climatic conditions; logistics concepts of furnishing the ammunition to the using unit; transportability, for example, high velocity airdrop; and length and type of storage. All of these guidelines, criteria, and tests are to give assurance that our packaging will withstand field handling and storage.

Yet, there still are field storage and handling problems that plague us. Before 1967, there was no requirement that wooden structures be resistant to microbiological attack. Experience in Southeast Asia showed the necessity for such a requirement. Since then, such materials must be treated with a water-repellant, fungus-proof solution. A more recent problem is that presented by flammability of wooden packing materials in the event of a depot fire. Work on this problem is currently underway from the viewpoint of using non-flammable, or less flammable, materials or for treating the wood with a fire retardant.

A recurring problem in Southeast Asia, related to potential fire hazards of packing, was the difficulties involved in maintaining safe distances between adjacent stacks of ammunition in field storage. Because of the hazardous nature of ammunition, detailed descriptions of the minimum distance between stacks and the maximum quantity permitted to be stored per stack are prescribed. These values, known as quantity-distance classes, vary depending on the type of ammunition, presence of barricades between stacks, and similar factors. While they can be scrupulously observed in the United States, the exigencies of field storage, such as availability of space, necessity to consolidate depot areas for security purposes, limitations in equipment and manpower, and peculiarities of terrain, often lead to their being honored more in the breach than the observance. Allied with this requirement is that of storage compatability, which groups the many types of munitions into categories permissible to be stored together. For example, commercial dynamite is not permitted to be stored with any other ammunition or explosive. These requirements also can add complexity to field storage.

As old problems are solved, new ones are bound to arise. And again, the logistician and the packaging engineer must meet the challenge and get ammunition into the user's hands in the quantity and quality that will insure the success of our Armed Forces. ALOG

Howard M. Weiner is chief of the Engineering Section of the Munitions Packaging Branch at Picatinny Arsenal. Holding a B.S. in chemistry from Long Island University, an M.A. in education from Columbia University, and an M.S. in chemistry from Stevens Institute of Technology, Mr. Weiner has been involved with all phases of ammunition packaging since 1951.

☐ Open storage of ammunition.

LOGFORM *A Continuing Series of Formulas of Use to the Practicing Logistician*

The operational availability of any piece of Army equipment is directly related to its reliability and maintainability. In reliability and maintainability (RAM) data sources, reliability is expressed as the mean time between failure (MTBF) and maintainability is expressed as the mean time between maintenance (MTBM). Those mean times are given in hours.

Unfortunately, most data sources focus on either reliability or maintainability, so one factor or the other (MTBF or MTBM) might be unknown. To overcome the absence of a single comprehensive data source, the U.S. Army Ordnance Center and School has developed factors for the ratios of MTBF to MTBM for several military commodities. For example, the factor obtained by dividing the mean time between failures by the mean time between maintenance for a consolidated group of wheeled vehicles proved to be 3.8.

The following formula, taken from the RAM Handbook for the Combat Developer, July 1975, shows the relationship between operational availability (A_o) and MTBF and MTBM.

$$A_o = 1 - \frac{OT}{TT} \times \frac{MDT}{K(MTBM \text{ or } MTBF)}$$

Where — OT = Operating Time
TT = Total Time
MDT = Mean Downtime for Maintenance or Failure
MTBM = Mean Time Between Maintenance Actions

$$K = \frac{MTBF}{MTBM}$$

PROBLEM: Provide an estimate of the operational availability (A_o) of a heavy equipment transporter performing 50 missions of 10 hours duration each during a 90-day combat period. Your data base contains only the MTBM factor and indicates 12 hours as the time needed for maintenance.

SOLUTION: Substitute given factors into the equation in the common time frame of hours. Lacking information for MTBF, use the ratio factor for wheeled vehicles (3.8) as K.

GIVEN: OT = 50 missions × 10 hours per mission = 500 hours.
TT = 90-day combat period = 2,160 hours
MDT = 12 hours
MTBM = Variable according to RAM data
K = 3.8

By increasing the MTBM factor in successive equations, the percentage of operational availability increases. Also, by using the K factor in the ratio with each given MTBM, the value of MTBF can easily be found. For example, if MTBM = 10, then $\frac{MTBF}{10} = 3.8$ or MTBF = 38.

A chart of the values of MTBM, MTBF, and A_o is shown below.

MTBM (hours)	MTBF (hours)	A_o
10	38	92.7%
20	76	96.3%
30	114	97.6%
40	152	98.2%
50	190	98.5%
60	228	98.8%
70	266	99.0%
80	304	99.1%

From the chart, if an operational availability of more than 96 percent is required to support the 90-day combat period, the MTBF for the transporter should be at least 75 hours or 1,500 miles at an average speed of 20 miles per hour. Using the K factor of 3.8 for wheeled vehicles to calculate MTBM, the approximate mileage between maintenance would be 395 miles.

The MTBF and MTBM thus determined may be used as a baseline for establishing minimum essential requirements in a materiel need document or for performing sensitivity analyses in a logistics simulation model.

The MTBF-to-MTBM ratios for other commodities have been or are being determined. A detailed summary of the analytical technique used to determine these ratios is available from the authors of this *Logform* by writing to—Major Floyd D. Harvey and Mr. Anthony J. Saponaro, U.S. Army Ordnance Center and School, Aberdeen Proving Ground, Aberdeen, Maryland 21005. ALOG

ALOG DIGEST

OUTLOADING PROCEDURES TESTED IN AIRDROP EXERCISE

An emergency deployment exercise primarily designed to evaluate newly developed outloading procedures was recently conducted by the 82d Airborne Division at Fort Bragg, North Carolina. The exercise put into action the sequence of events that would take place in an actual alert situation.

An entire infantry battalion and its support units, including a field artillery battery, had its vehicles rigged to be dropped from aircraft. To accomplish this task, one battalion of the division is designated as a support unit. This battalion is usually the last in the division to depart during a full division deployment.

The designated support battalion, assisted by troops of the division's heavy drop rigging platoon, used assembly line procedures to pad and attach parachutes to 148 platforms of vehicles and supplies during the exercise.

☐ A jeep rigged for dropping from a C-130 Hercules aircraft is loaded onto an Air Force platform loader by troops of the 82d Airborne Division.

Also prepared for airdrop were 80 platforms for containerized delivery system operations. This involved the packing of ammunition and supplies in marked packages that are ready for quick distribution when they reach the ground. A total of 125 tons of rifle, mortar, and artillery ammunition was moved during the exercise from storage areas to the weigh-in scales and loading ramp at Pope Air Force Base.

Close coordination with the Air Force was required for the outrigging operation which culminated in a night parachute drop by infantry and field artillery units of the division.

UTTAS TESTING UNDERWAY

Government competitive testing of two prototype helicopters for the Army's utility tactical transport aircraft system (UTTAS) began in March. The competing contractors are Boeing Vertol and Sikorsky Aircraft Companies.

During competitive testing, emphasis will be placed on mission performance, high reliability, easy air transportability, tactical agility, and durability.

Development testing is underway at Fort Rucker, Alabama, and Edwards Air Force Base, California. Operational testing began in June at Fort Campbell, Kentucky.

The full-scale development phase of the program will end in December 1976 and a low rate production contract award will be issued to the winner of the source selection evaluation in January 1977.

FUEL INJECTION ENGINE TESTED FOR ARMY JEEPS

A piston engine that runs on a wide variety of fuels, delivers better fuel economy than a comparable gasoline engine, and meets Federal exhaust emission standards has been developed for the Army's ¼-ton jeep under direction of the Tank-Automotive Command, Warren, Michigan.

The engine, called the L-163S, is a four-cylinder 163-cubic-inch unit patterned after the existing four-cylinder jeep engine which displaces 141 cubic inches. It uses a fuel injection system similar to that used on diesel engines.

Unlike a conventional gasoline power plant that uses a carburetor to deliver a mixture of fuel and air to the cylinders, a fuel injector at each cylinder of the new engine injects precisely the amount of fuel needed to

operate the engine at any given horsepower requirement. This permits operation with a leaner air-fuel mixture than that of a conventional gasoline engine resulting in a 30-percent improvement in fuel economy.

The new engine can be installed in existing jeeps without making vehicle modifications. Tests of additional prototypes are scheduled. Barring delays in current production and test schedules, full-scale production of the engine could begin in 1979.

☐ Close observation is required to discern the outlines of the Army's recently tested snow camouflage net shown in the center of the photo between the bushes.

SNOW CAMOUFLAGE NET NEAR TYPE CLASSIFICATION

Type-classification review for the lightweight camouflage snow net is underway following successful Winter tests at Fort Greely, Alaska, by the Army Test and Evaluation Command. The net is the third in a camouflage screening and radar-scattering system that includes a desert net and a woodland camouflage net. Both these nets and the basic support assembly kit have already been type-classified standard.

All three nets are designed to provide concealment of equipment from visual, photographic, and radar detection. Each comes in radar-transparent and radar-scattering versions.

A single camouflage screen can be erected in five minutes and additional screens can be connected at about the same rate to form multiscreen assemblies. A complete model with basic and filler net, repair kit, and carrying case weighs approximately 65 pounds.

The nets were developed by the Army Mobility Equipment Research and Development Command.

ARMY AMMUNITION REQUEST LISTS PRIORITIES

A total of $910.8 million has been requested by the Army for conventional ammunition items and ammunition production base support in fiscal year 1977.

Ammunition items account for $655.1 million of the request. This amount provides for worldwide training consumption and inventory losses, selected procurement of modern hardware, buildup of war reserves to meet acquisition objectives, and maintenance of an active ammunition production base for key ammunition items. Artillery ammunition, totaling $297.3 million, accounts for 45 percent of the ammunition hardware request.

The $255.7 million requested for the ammunition production base will provide for production support and replacement of Government-owned facilities, layaway of facilities, and continuation of a multiyear effort to rehabilitate and improve the Army's ammunition production base.

The fiscal year 1977 request is $35.2 million less than the combined fiscal year 1976 and 7T programs.

☐ Several improvements over the standard helmet now in use are offered in a proposed infantry helmet now under development by technologists at the Army Natick Research and Development Command. The helmet provides better head coverage, increased ballistic protection, and greater comfort and stability with no increase in weight. It has been designed in three sizes with a simplified cradle suspension system and an adjustable chin strap.

☐ Unloading of the first carload of a scheduled 400 1¼-ton trucks took place recently at Fort Bragg, North Carolina.

FIELDING OF COMMERCIAL TRUCKS STARTED BY ARMY

Delivery of 900 1¼-ton trucks—500 to Fort Hood, Texas, and 400 to Fort Bragg, North Carolina—was accepted by the Army recently. The vehicles are the first Army receipt of 33,759 commercial production-line trucks purchased under a $146.5-million contract awarded to Chrysler Corporation in 1975. See *Army Logistician, Digest,* July-August 1975.

Purchase of the trucks was made on the basis of recommendations contained in the WHEELS study, an extensive analysis of Army requirements for wheeled vehicles. They are being fielded under the Army Materiel Development and Readiness Command's Project Hand-Off, a program that works much like a commercial warranty and guarantees that equipment issued to the troops will perform as designed.

Delivery of the trucks is scheduled for completion in September 1977. Issues will be made to Active Army units in CONUS, Europe, and Korea, in that order, and then to the Reserve components.

REVIEW DEALS WITH WARTIME AUTOMATION OUTAGE PROBLEMS

A review of Army supply requisitioning procedures by the Army Logistics Center has revealed a critical reliance on automated data processing (ADP) equipment for supply operations. The susceptibility of ADP systems to failure or destruction due to enemy action during wartime makes planning for continuity of operations imperative.

Analysis showed that a large corps-size force deployed overseas during hostilities would probably need about twice the number of short tons in supplies and equipment on hand if it depended on manual logistics management rather than ADP.

Manual operations would also require hundreds of additional personnel to transport and handle these extra supplies. For example, about 425 more people would be needed for manual supply management of the corps-size force used in the review. Overall support would be much less responsive and combat effectiveness would be reduced by return to manual management and requisitioning according to the study.

As a result of the Logistics Center review, several recommendations were made for both short- and long-term ADP outages. Short-term outages are classified as those less than 72 hours or those occurring during unit movement. Long-term are those over 72 hours.

During short-term outages it is recommended that high priority requisitions be processed by the next higher supply source while other requisitions are held at the unit. Transactions would be post-posted and low priority requisitions processed when the organic ADP again became operational.

When long-term outages occur, ADP operating personnel could be moved to backup computer-servicing locations, if available. Management reports would be curtailed, and in some cases, supply requests would be handled by personnel in another theater of operations or possibly in the continental United States.

ORDNANCE MUSEUM READY FOR BICENTENNIAL THRONG

Visitors to east coast sites of the Nation's origins this bicentennial year may want to include the Army Ordnance Museum at Aberdeen Proving Ground, Maryland, in their tour schedules. Should they choose to do so, they will see one of the most complete and comprehensive collections of ordnance material in existence today.

The collection consists of small arms, artillery, combat vehicles, ammunition, body armor, and many other items. Because the material is of both United States and foreign design, it provides a complete story of modern ordnance development.

☐ A German King Tiger tank of World War II vintage is one of hundreds of vehicles on display at the Army Ordnance Museum.

Established in 1919 as a repository for captured foreign materiel, the Ordnance Museum features exhibits showing research and design in the development of weapons and equipment. Specimens represent accomplishments in ordnance design, from simple developments to major breakthroughs.

The museum, located north of Baltimore on Interstate 95, is open Tuesdays, Thursdays, and Fridays from noon to 5 p.m., and Saturdays and Sundays from 10 a.m. to 5 p.m.

ALPHA IN ACTION

The Army Armament Command at Rock Island, Illinois, recently completed the conversion to the AMC (now DARCOM) Logistics Program Hardcore Automated (ALPHA).

Conversion to the system followed Army approval of an Army Materiel Development and Readiness Command plan to develop standard systems on standard equipment for its major subordinate commands.

Over 160,000 hours of ALPHA-related training have been performed by people working with the system. The system will reduce files and provide an efficient data processing base and automation in areas not previously automated, according to system developers.

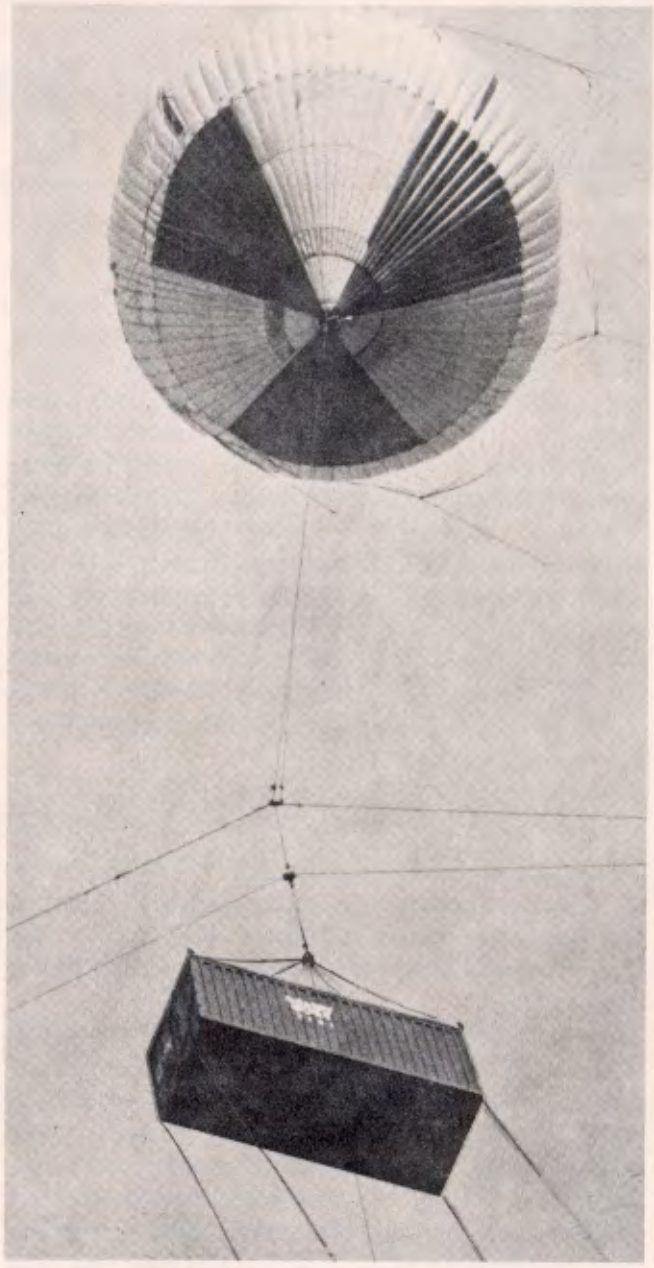
NEW APPROACH TO CONTRACT BIDDING SHOWS SAVINGS POTENTIAL

A military housing equipment contract costing more than $100,000 above the lowest bid is expected to save the Government three times the additional cost. The saving is a result of the experimental technology incentives program (ETIP), administered by the Commerce Department's National Bureau of Standards.

Under ETIP auspices, the Federal Supply Service requested bids on a contract for 7,000 gas and electric water heaters to be installed in military housing units. Bidders were required to submit not only the initial cost of the heaters but also the expected fuel costs to operate the heaters over their estimated ten-year life span.

This enabled the Government to award the contract to the bidder offering the lowest overall cost over the estimated life of the unit rather than on the basis of initial cost alone. The heaters, purchased in 1975, use 11 percent less energy than the low bid priced model and are expected to save over $300,000 in fuel costs.

The program is encouraging development of new technology to get improved products on the market, rather than base-cost cheaper items, and may possibly change the Government's current low bid concept.



BALLOON IS UP

A series of feasibility tests with balloons were conducted recently at Fort Story, Virginia, to evaluate the use of heavy-lift balloons in the offshore unloading of cargo ships.

The balloon system was tested jointly by the services to determine if the balloons offer flexibility in offloading containers and other equipment from military or commercial ships.

The test balloon contained 530,000 cubic feet of helium, providing a load capacity of about 24,000 pounds. It was controlled by large, self-propelled winch vehicles, paying out and pulling in steel cable to which the balloon was attached. ALOG

RESEARCH REPORTS

A System for Planning and Controlling Procurement Operations: Goal Setting and Performance Analysis; sponsored by U. S. Army Materiel Development and Readiness Command (DARCOM); conducted by U.S. Army Logistics Management Center (Army Procurement Research Office). Study Information—AUTOVON 687-1180. Status: Completed.

After a review of the existing procurement management system, the study group formulated a new system including new methods for establishing and measuring performance goals. Tentative objectives and an implementation plan are included in the report. Two subsequent reports will provide complete details of the new system and outline plans for integrating it into the DARCOM structure.

Ownership Cost Model Feasibility Study; sponsored by Deputy Chief of Staff for Logistics; conducted by U.S. Army Materiel Systems Analysis Activity. Study Information—AUTOVON 283-4210. Status: Completed.

The feasibility of developing a standard ownership cost model applicable to all commodity types was examined. Although an analysis of existing models revealed that the Logistics Cost Analysis Model IV could be modified for use as a standard model, it was concluded that an entirely new model would be more effective but very costly. Four approaches to development of a new model were presented along with their respective first-order cost estimates. Current data systems were analyzed and found to be inadequate to support a standard model.

Deadline Cost Model Study; sponsored and conducted by U.S. Army Armament Command (Systems Analysis Directorate). Study Information—AUTOVON 793-6583. Status: Completed.

This study group developed a generalized model to measure the cost incurred when an item of equipment is removed from operation because of actual or potential functional failure. Factors considered in the model development were acquisition cost, service life, repair cost, crew cost, and impact cost. Based on sample deadline costs of various weaponry, a sensitivity analysis indicated that the model has considerable stability and is not greatly sensitive to input estimation errors.

Army Utilization Management of Metallic Materials; sponsored by U. S. Army Materiel Development and Readiness Command; conducted by U.S. Army Materials and Mechanics Research Center. Study Information—AUTOVON 955-3295. Status: Completed.

Twenty metals used by the Army were studied to determine their locations and geologic availability. The study group identified abundant metals that could be used more extensively and metals that could serve as substitutes for those that are in short supply. Recommendations for effective resource utilization, including mineral extraction, property enhancement, and recycling were presented also.

COMING EVENTS

JUNE

22–24	Summer Symposium—Military Operations Research Society	Fort Bliss, Tex.

JULY

7–9	4th Annual Convention—U.S. Army Warrant Officers Association	Fayetteville, N. C. Bordeaux Motor Inn
18–24	National Conference—Intersociety Committee on Transportation	Los Angeles, Calif. Los Angeles Hilton

AUGUST

8–11	75th Annual Convention—Food Service Executives' Association	Chicago, Ill. Hyatt Regency
17–19	11th International Logistics Symposium—Society of Logistics Engineers	Valley Forge, Pa. Sheraton Inn

CAREER PROGRAMS

BG SELECTIONS REFLECT SPECIALTY CONCEPT

The recent selection of brigadier general officer nominees indicates that the trend toward specialty area career development under the Officer Personnel Management System is becoming evident even at the general officer level. Of the 53 colonels selected for promotion to brigadier general, 24 were chosen to fill general officer positions in specific functional areas.

Nine colonels were selected from logistics-related areas. The areas and number of positions are —Supply, 2; Procurement, 2; Maintenance, 2; General Logistics, 1; Transportation, 1; and Chemical, 1.

These selections reflect the OPMS concept of specialization; however, the dual-specialty development concept is not expected to be realized at the general officer level for several years.

TWO LOG FIELDS INCLUDED IN EPMS EXPANSION

The third group of enlisted career management fields (CMF) will begin operation under the Enlisted Personnel Management System on 1 October. At that time, roughly 60 percent of the Army's enlisted force and almost half of the Army's enlisted career management fields will be operating under EPMS.

The third group consists of six career fields. They are Combat Engineer, CMF 12; Field Artillery, CMF 13; Medical, CMF 91; Petroleum, CMF 92; Food Service, CMF 94; and Military Intelligence, CMF 96.

Implementation of the fourth group is scheduled for April 1977. Soldiers should expect their first skill qualification test approximately twenty months after their CMF begins operation under the Enlisted Personnel Management System.

CBR PROGRAM GETS BOOST

The Army, in a move to bolster its chemical warfare posture, has authorized the activation of seven chemical, biological, and radiological organizational elements.

It has also directed that the battalion chemical noncommissioned officer position be included in the table of organization and equipment for both the Active Army and Reserve components of the Army.

Concurrently, funds have been authorized for improving and expanding training in chemical-related specialties for officer and enlisted personnel.

These actions will provide the expertise required to increase the emphasis on nuclear, biological, and chemical training and doctrine.

SUPPLIES IN STORAGE COURSE INTRODUCED

A new three-day course entitled Care of Supplies in Storage (COSIS) Management Orientation has been developed by the Joint Military Packaging Training Center.

The course is designed to familiarize selected Army military and civilian personnel with the management policies governing the care of supplies in storage. This includes areas such as quality control, auditing, inventory control, workload forecasting, and preservation in packaging. It is presented onsite and at the center's facility at Aberdeen Proving Ground, Maryland. Applicants must be assigned to or anticipate assignment to a COSIS-related position.

For more information write—Director, Joint Military Packaging Training Center, ATTN: DRXPT-S, Aberdeen Proving Ground, Md. 21005.

APPRENTICESHIP PROGRAM UNDERWAY

The Army's first apprenticeship program, Heavy Equipment Operators and Mechanics, has been registered with the Bureau of Apprenticeship and Training, Department of Labor. Participation is voluntary and there is no cost involved.

The program is open to soldiers who meet the program standards and who are in the following military occupational specialties—

62B—Engineer Equipment Repairman.

62D—Asphalt Equipment Operator.

62E—Crawler Tractor Operator.

62F—Crane Operator.

62G—Quarryman.

62H—Concrete Paving Equipment Operator.

62J—General Construction Machine Operator.

62K—Grader Operator.

62L—Wheeled Tractor Operator.

62M—Rough Terrain Forklift and Loader Operator.

Participants are awarded a cer-

tificate upon successful completion of the training, verifying that the soldier has attained journeyman status (identical to that of his civilian counterpart), as recognized by the Department of Labor and civilian industry.

Other Army apprenticeship programs are now being developed in the fields of food service, transportation, and automotive maintenance.

For a full description of the Heavy Equipment Operators and Mechanics program, see DA Pamphlet 350-56.

MEDICAL MOS STRUCTURE REVAMPED

Enlisted career management field 91, Medical, has been realined under the Enlisted Personnel Management System and now consists of 23 rather than 25 military occupational specialties.

MOS 42F, Dental Fixed Prosthetic Specialist, has been eliminated and personnel and positions in that specialty have been incorporated into MOS 42D, Dental Laboratory Specialist.

MOS 91Z, Medical Senior Sergeant, has been deleted. Those noncommissioned officers formerly possessing MOS 91Z have been awarded MOS 91B50, Medical Specialist. Command sergeants major will continue to be awarded MOS 00Z50.

These and other changes in CMF 91 will be reflected in change 6 to AR 611-201 to be effective 1 September 1976.

GRAD SCHOOL OFFERED TO SELECTED OFFICERS

Fully and partially funded graduate civilian schooling is available to captains and majors in a variety of logistics-related areas.

Officers meeting the criteria established in AR 621-1 may apply for the schooling in a discipline that supports their primary or alternate specialty. The specialty must be understrength.

Logistics-related disciplines for which funding will be considered are logistics management, procurement and contract management, transportation and traffic management, food technology, hotel and restaurant management, operations research and systems analysis, and automatic data processing.

Applications and queries should be forwarded to the officer's career management division at the U.S. Army Military Personnel Center.

QUALITY ASSURERS OFFERED NEW TRAINING MEASURE

The Defense Supply Agency has developed an eight-hour course on using and understanding the metric system for its quality assurance personnel. It is being presented onsite at DSA contract administration activities.

The course will eventually become part of the basic training requirement for all quality assurance personnel.

SPECIALIZED SKILL TRAINING AVAILABLE

Military personnel in logistics disciplines who are assigned to or anticipate assignment to a position requiring a special skill for which service school training is not offered may qualify for fully funded short course training.

Individuals selected for short-course training attend courses or seminars of less than twenty weeks at a civilian school. Tuition and per diem funds are provided by the Army. In most cases, a service obligation is not incurred.

For more information on the program and its application procedures see chapter 9, AR 621-1, Training of Military Personnel at Civilian Institutions.

NEW TRAINING REQUIREMENT FOR ADP CAREERISTS

Plans are underway to develop a one-week course in automatic data processing (ADP) management. The course would be required for all U.S. Army Materiel Development and Readiness Command civilian careerists in the automatic data processing civilian career field and would also be available to personnel in ADP-related fields.

Approximately 3,000 students annually will attend the course, which is to be offered by the School of Management Information Systems at the U.S. Army Logistics Management Center. The date of the first offering of the course has not been set.

DIVERSIFIED COMPUTER TRAINING OFFERED

The Department of Defense Computer Institute has expanded the scope of its computer training. The instruction, available to military and civilian personnel, ranges from user-oriented introductory courses to advanced technical courses. The institute offers 13 courses, all of which can be tailored to meet the specific needs of the requesting activity. The courses are presented onsite or at the institute.

For more information write—Registrar, DOD Computer Institute, Building 175, Washington Navy Yard, Washington, D.C. 20374.

RECENTLY PUBLISHED

AR 10-9, United States Army Computer Systems Command, 5 April 1976.

AR 11-8, Principles and Policies of the Army Logistics System, 18 March 1976 (effective 15 April 1976).

AR 11-37, Quality Assurance Program (Accounting, Disbursing, Examination and Pay Activities), 14 April 1976.

AR 18-1, Policies, Objectives, Procedures, and Responsibilities—Management Information Systems, 22 March 1976 (effective 1 May 1976).

AR 37-100-77, The Army Management Structure (AMS), 10 February 1976 (effective 1 October 1976).

AR 40-61, Medical Logistics Policies and Procedures, 25 February 1976 (effective 1 April 1976).

AR 55-38, C2, Reporting of Transportation Discrepancies in Shipments, 12 April 1976.

AR 210-6, Furniture and Household Equipment Support for Family Housing and Bachelor Housing, 25 February 1976 (effective 1 April 1976).

AR 380-89, United States Port Security Programs, 1 April 1976 (effective 15 May 1976).

AR 601-25, Delay In Reporting for Exemption from Active Duty and Active Duty Training, 1 April 1976 (effective 15 May 1976).

AR 710-1, C14, Centralized Inventory Management of the Army Supply System, 12 April 1976 (effective 15 May 1976).

AR 750-56, Maintenance of Supplies and Equipment, 9 March 1976.

DA Pam 11-3, Investment Cost Guide for Army Materiel Systems, 12 April 1976.

DA Cir 70-5, Design to Cost, 9 April 1976.

DA Cir 755-15, Disposition of Uneconomically Reparable Major End Items, 17 March 1976.

DOD 4515.13-R, Air Transportation Eligibility, 15 March 1976.

CTA 50-910, Laundry and Dry Cleaning Equipment, 31 March 1976.

NOTE—*The date listed after the publication title is the date of technical edit by The Adjutant General's Office. Printing and distribution usually occur several months after this date.*

FM OUTLINES MATERIEL MANAGEMENT CENTER ROLE

FM 54-23 (Test), Materiel Management Center—Corps Support Command, presents the doctrine and procedures applicable to the operation of a corps support command's materiel management center.

The new manual is based on results of the Echelons Above Division and the Rapid Integrated Logistics Support System studies.

DESIGN-TO-COST GUIDE NEARS COMPLETION

A new reference book entitled Joint Logistics Commanders Guide on Design to Cost will soon be published. It provides guidance for applying the concepts set forth in DOD Directive 5000.28, Design to Cost, which is applicable to the acquisition of defense systems, subsystems, and components. The guidebook also outlines the design-to-cost goals that should be included in contracts. It will be distributed through normal channels.

REVISED REG ANNOUNCES PROVISIONING POLICY

Fully revised AR 700-18, Provisioning of U.S. Army Equipment, will be available soon. It establishes guidelines for managing and evaluating provisioning programs within the framework of the life cycle management model. The regulation describes the screening, selection, coding, and cataloging of support items during provisioning.

ALOG EMPHASIS

(Continued from page 1)

IN-HOUSE AMARC FORMED BY ARMY

An "in-house" Materiel Acquisition Review Committee has been established by the Army to continue the work begun by the Army Materiel Acquisition Review Committee. The committee is chaired by the Deputy Chief of Staff for Research, Development, and Acquisition with representation from the Deputy Chief of Staff for Logistics, Assistant Secretaries of the Army, Army Materiel Development and Readiness Command, and the Army Training and Doctrine Command. The committee will examine problems and make necessary adjustments to strengthen the Army materiel acquisition process from the time of identifying the requirement to distributing the item to the field.

STOCK FUND PRICES RAISED AND FROZEN

Standard prices for all Defense stock fund items, except subsistence, bulk petroleum, and personal clothing, will be updated as of 30 June by the Secretary of Defense in an effort to stabilize Defense stock fund prices. The military services and Defense Supply Agency have been instructed to update current prices based on the latest known product cost. Added to this will be the normal surcharge for losses and transportation plus 7 percent of the whole to preclude a stock fund loss on procurement. Revised prices will be effective 1 October.

ARMY UPGRADES CHEMICAL TRAINING

The Army is improving its capability to operate in a nuclear, biological, and chemical (NBC) environment according to a recent message from the Department of the Army. About $9 million was added to the fiscal year 1976 budget to purchase chemical defensive equipment for use in training. The budget before Congress for fiscal year 1977 includes more than $46 million to equip priority forces with chemical protective equipment. Soviet advances in the chemical warfare field were cited as one of the reasons for these actions to improve the Army's NBC defensive posture. Considerable study is being conducted toward the improvement of NBC defensive plans and policies at all Army levels.

MISSILE SUPPORT EQUIPMENT FIELDED

First units of the latest modular improvement to the Pershing missile system were recently turned over to Army troops in Germany. The new equipment, called automatic reference system and sequential launch adapter, eliminates the requirement for launch from pre-selected and surveyed points and permits launching of up to three missiles without uncabling and recabling. Significant improvement in launch reaction time and in overall effectiveness is anticipated with the equipment. Delivery of the equipment to the field was made under Project Hand-Off, which commits the Army Materiel Development and Readiness Command to stand behind the equipment as does a commercial warranty in private industry.

REQUISITION TRAFFIC STUDIED

A coordination group under the United States Army, Europe (USAREUR) Deputy Chief of Staff for Logistics is meeting biweekly on logistics improvements for requisition traffic. The group's purpose is to correct requisition traffic problems in class I troop issue and commissary resale items and to coordinate study into problems of other classes of supply. It is currently considering the problem of transmitting requisition data between the Army Materiel Management Agency, Europe, and the commissaries and other requisitioning activities of the USAREUR closed-loop requisitioning system.

STUDY AND MODEL LISTS AVAILABLE

A bibliography of studies on the subject of Systems Reliability-Availability-Maintainability and a bibliography of operations research models on Materiel Reliability-Availability-Maintainability may be obtained by writing DLSIE, ALMC, Fort Lee, Va. 23801 or by calling AUTOVON 687-4546.

BELGIAN GUN SELECTED BY ARMY

A Belgian machinegun is the Army's choice to replace the 7.62-millimeter gun now mounted coaxially on armored vehicles. About 18,000 of the 7.62-millimeter Belgian guns—called the Mag 58—will be purchased to replace weapons and to serve as spares and as coaxial weapons on new armored vehicles. The Army decided that the operational advantages of the Belgian gun, which was selected over an American-made version of the M60, would provide the American soldier with the best weapon available.

PHONE DEVICE FOR TRAINING TESTED

Tests to evaluate a telephone conference device for training purposes are being conducted by the Army Logistics Center, Fort Lee, Virginia. Called the Darome Convener, the device is a self-contained, portable communication instrument that provides audio amplification. It plugs into a standard four-prong telephone wall receptacle and uses existing communications systems. The convener will permit instructors and students at widely dispersed locations to engage in two-way conversation similar to a regular classroom. If current tests indicate the device is useful and cost-effective, the system will be fielded to assist all types of Active and Reserve component units in overcoming critical training problems.

AIRMOD WORKS

A project called AIRMOD, initiated by the Army four years ago to reduce the 2.9-million man-hour backlog of modification work orders for aircraft, is working. The backlog has been reduced to 250,000 man-hours early this year. Elements of the program contributing to the reduction have been the use of field contract teams, installation of modifications during normal depot repair and overhaul, and establishment of a configuration control board at the Aviation Systems Command and in Department of the Army Headquarters.

GUARD PROGRAM RAISES PROFICIENCY

A hands-on training program for members of the 363d Heavy Equipment Maintenance Company, New Mexico Army National Guard, is improving personnel proficiency and equipment readiness for those involved. Under the program, equipment needing repair at Fort Carson, Colorado, is delivered to the maintenance company just before its weekend training assemblies. Most of the repairs are performed on wheeled vehicles destined for issue to the Army National Guard. Job order, repair parts, and criteria for repair are delivered with the vehicles. The program is being expanded to include Army National Guard units in Kansas, South Dakota, Utah, Montana, and Colorado.

LOG DISTRIBUTION SYSTEM STUDIED

Wholesale storage and distribution systems in continental United States and Hawaii are being studied by a group established by the Joint Logistics Commanders. The group is comprised of representatives from the Army Materiel Development and Readiness Command, Air Force Logistics Command, Navy Material Command, Marine Corps, and Defense Supply Agency. The study, scheduled for completion in March 1977, is expected to provide decision makers with alternatives for improving existing systems.

PLAN FOR DAMMS COMPLETED

The general development plan for the Department of the Army theater movements management system (DAMMS) has been completed by the Army Logistics Center and forwarded to DA for staffing. DAMMS is an automatic data processing system designed to facilitate movements management within the theater of operations. It will accommodate current movements management doctrine and known theater requirements. The plan details systems content and the approach to be used in developing automated procedures.

BRIGHT BRASS ON IN OCTOBER

Bright brass insignia of grade will be regulation wear for enlisted personnel on the overcoat, raincoat, and windbreaker starting 1 October. On that date, one pair of bright brass insignia of grade will be added to the five pair of cloth insignia now issued at Government expense upon promotion, reduction, or conversion in grade. Military clothing stores should receive shipments in the near future. The brass insignia may be purchased at local PX's for about 30 cents a pair.

TRAINING SUPPORT CENTER STARTED

Army-wide centralized management of training support activities is scheduled to start in July at Fort Eustis, Virginia. The new U. S. Army Training Support Center will develop, produce, procure, and deliver training support products for all Active Army and Reserve component forces. Integrated in the support center will be the Army training support activity, correspondence course program, training literature program, training devices requirements office, and individual testing and evaluation group.

ARMY TRIES FLEXITIME

Approximately 20 Army locations in CONUS are using flexible working hours for both soldiers and civilian workers. Use of the individually tailored working hours, or flexitime, follows a test program authorized last year for civilian workers. Under flexitime, participants work the same number of hours as they would under fixed time but are permitted to begin work earlier or later and complete the workday at a corresponding time. They must, however, be at work during locally determined "core" hours, which are usually the busiest time of the day. Preliminary data on the test program indicates that flexitime improves productivity and morale, according to the Department of the Army.

ARMS SECURITY ACTION CONTINUES

Around $26 million has been included in the fiscal year 1977 budget to act on the recommendations of the Department of the Army Physical Security Review Board report on the security of conventional and chemical arms, ammunition, and explosives. Of this amount, about $8.9 million is for the installation, repair, and maintenance of the Joint Services Interior Intrusion Detection System. Some $3.9 million is budgeted for Army major commands to upgrade conventional ammunition security and almost $9 million for the upgrade of chemical agents and munitions security. Close to $4.3 million is budgeted for upgrading arms storage rooms and buildings.

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Logistics and logisticians are viewed in different ways by different people. Over the years, a variety of views have been published in Army Logistician *magazine. In this article, Major Creel concentrates on the leadership role of the logistician.*

—Editor

Logisticians Must Be Leaders

by Major Joe C. Creel

The mission of the logistician is to "win the first battle," by meeting the need, whenever and wherever it is required. The success of each combat mission is directly related to the quality and timeliness of the support provided.

Success on the battlefield demands that the logistician be dynamic, innovative, and resourceful. It is normal for the logistician to function in isolated areas where he is solely responsible for the support provided. The logistician must provide positive, innovative solutions to situations or questions that arise. Frequently, there is no one else to turn to for guidance. Immediate action must be taken as the situation dictates, for to delay may jeopardize the mission. The logistics decisions are equal in importance to the tactical decisions in terms of mission accomplishments. The leadership ability of the logistician has a direct influence on success or failure on the battlefield.

As a leader, the logistician must weld the personnel under his command into a strong, dedicated, cohesive military organization.

The logistician must be so versatile that a wide variety of combat tasks such as rear-area and convoy security can be accomplished as expertly as the logistics mission, permitting the tactical commander to center his attention on the battlefield.

The logistician supports the combat mission by allocating assets and anticipating requirements before they occur. No human can anticipate all requirements, so the logistician must be responsive to unexpected missions and maintain the flexibility to quickly satisfy all requirements. This flexibility can only be maintained by a thorough, professional knowledge of the logistics system.

The support element must provide the required support in a timely manner. Using today's supplies to fill yesterday's requirements is not accomplishing the mission! A sense of urgency must prevail in all the support elements. Everyone from the truck driver, mechanic, personnel clerk, or warehouseman to the chaplain's assistant must be imbued with the basic truth that he exists to support the combat arms. The support units' sense of urgency and dedication is a direct reflection of the logistician's leadership ability.

The logistician must be dynamic and capable. If the intangible asset called "leadership" is lacking, then all the trucks, supplies, and personnel under the logistician's command become wasted resources.

History records that the logistician has always been equal to any task. Let the future be assured that the tradition will remain unbroken. ALOG

Major Joe C. Creel is an instructor in the Logistics Career Department, U. S. Army Quartermaster School, Fort Lee, Virginia. He is a graduate of Jacksonville State College, Alabama, and holds an M.B.A. degree from the University of Alabama.