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General Tuttle Talks
With Army Logistician
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Soldier Support Expo '89

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COVER–The Army Troop Support Command adds meaning to the Army Materiel Command's philosophy of "customer support" by hosting soldier support expositions. Soldiers, like those shown on the cover, get to see and touch the variety of equipment the command supplies. Assistant Editor Janice Heretick visited the most recent exposition, photographing the equipment and talking with the soldiers who use it. The story begins on page 18.

This medium is approved for the official dissemination of material designed to keep individuals within the Army knowledgeable of current and emerging developments within their areas of expertise for the purpose of enhancing their professional development.

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**MORE HMMWV's
ON THE WAY**

The Army Tank-Automotive Command has awarded a 5-year, \$1-billion contract for 33,000 high-mobility, multipurpose, wheeled vehicles (HMMWV's). The contractor, AM General Division of LTV Missiles and Electronics Group of Mishawaka, Indiana, also produced the Army's first 70,000 HMMWV's.

**HOTLINE SAVES
TAX DOLLARS**

The Secretary of Defense recently reported that information provided to the Defense hotline has saved the Government more than \$88 million in the last 4 years. Since it began in 1979, the hotline has received more than 75,000 contacts. Of those, more than 14,500 complaints of fraud, waste, and abuse in Defense programs have warranted investigation by the Inspector General. To report fraudulent or wasteful practices, call AUTOVON 223-5080, commercial (202) 693-5080, or toll-free (800) 424-9098; or write to—Defense Hotline, The Pentagon, Washington, DC 20301-1900.

**BATTLE CENTER
BEING BUILT**

The construction contract for the Army Logistics Center's battle support center at Fort Lee, Virginia, was awarded last September. The center will provide a facility for conducting command post exercises; logistics analyses; and simulated combat, combat support, and combat service support training on site and, through a communications network, worldwide. The facility is expected to be operational in late 1991.

**SOLDIERS
GET SWEATS**

All active duty Army personnel must have a new physical fitness uniform before 1 October 1991. The uniform—consisting of a sweatshirt, a pair of sweatpants, two t-shirts, and two pair of shorts—is gray knit with black lettering on the shirts. Recruits are issued the new gear in basic training. Other personnel must purchase the \$55 uniform, and clothing allowances have been increased to offset the additional costs. The Army is the first service to get approval for a physical fitness uniform.

(Continued on page 56)

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I certify that the statements made above by me are correct and complete: Terry R. Speights, Editor, 20 September 1989.



Planning for Medical Mobilization

A frank assessment of the status of medical mobilization planning in the continental United States (CONUS) was made by Dr. William Mayer, then-Assistant Secretary of Defense for Health Affairs, in a March 1986 memorandum—

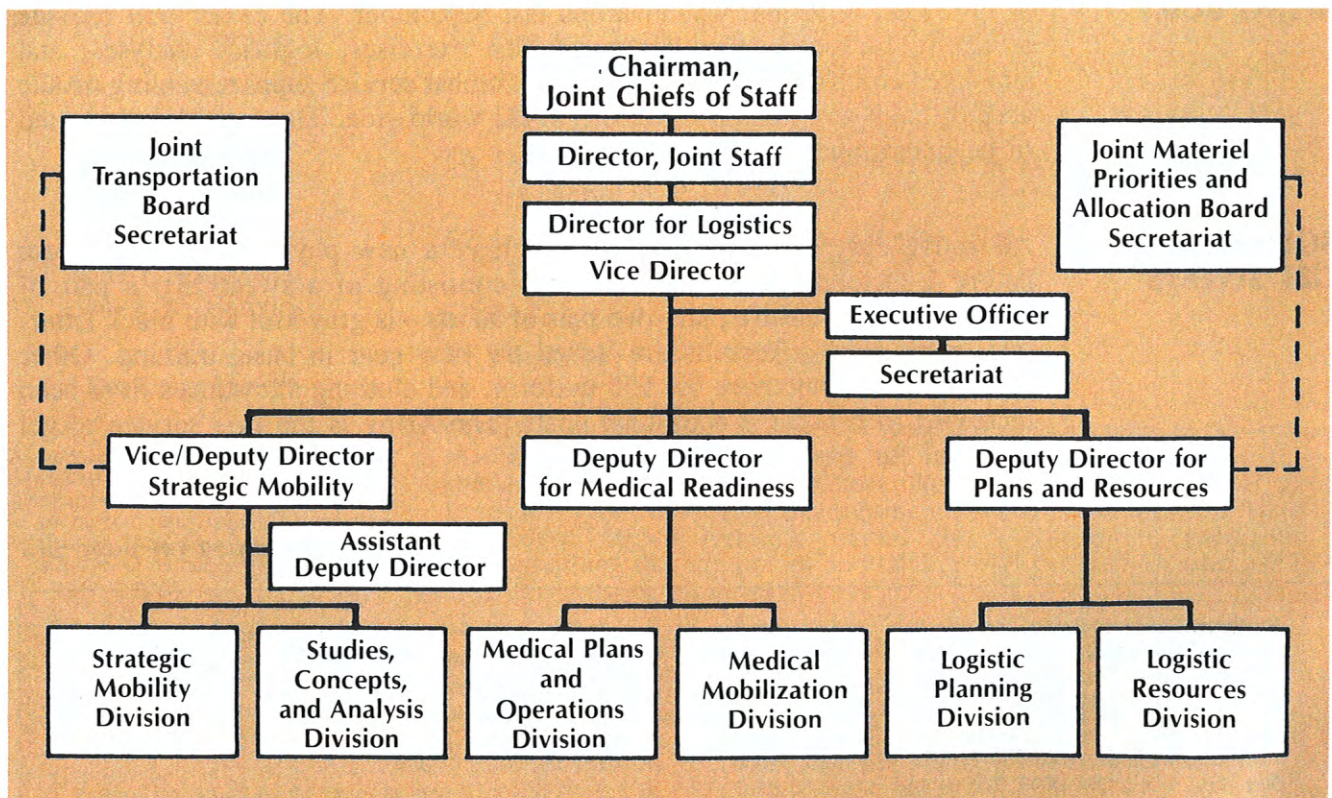
There has been little coordination among the services to determine utilization of facilities, installations, personnel, and equipment; timing, location, and anticipated numbers of mobilizing forces; and plans for casualty distribution.

To correct the lack of coordination, Dr. Mayer in that same memo directed that a task force be formed to write an integrated CONUS medical mobilization plan. The need for such a plan was clear: under full mobilization, the armed services would not have sufficient medical resources remaining in CONUS to care for all returning casualties, and no plan existed to

ensure that those remaining resources would be used effectively and efficiently.

After extensive studies and reports, the Joint Chiefs of Staff approved the creation of a medical mobilization planning cell under the Director for Logistics (J4) on 16 January 1988. This planning cell was later converted into the Joint Medical Mobilization Office under the J4 Deputy Directorate for Medical Mobilization (now the Deputy Directorate for Medical Readiness). (See the organization chart below.) The Joint Chiefs of Staff tasked the cell to—

- Develop an outline for the integrated CONUS medical mobilization plan.
- Develop CONUS regional requirements.
- Determine the most cost-effective method of developing, maintaining, and implementing regional plans.
- Verify the staffing for its successor, the Joint Medical Mobilization Office, and regional staffing



□ The organization of the Joint Staff Logistics Directorate shows the Deputy Directorate for Medical Readiness.

requirements.

Once the planning cell became functional on 1 March 1988, its staff began an exhaustive review of all previous medical mobilization studies to determine why they were not acceptable. The review found that previous studies shared one controversial element: all attempted to establish a distinct and separate medical command and control system that did not correlate with existing line command and control.

To avoid this problem, the planners framed three basic assumptions to guide their development of the medical mobilization plan. First, medical support should be treated like all other logistics support functions. Second, existing organizational and command structures should be considered and, if appropriate, used for medical support. Finally, CONUS should be considered a theater of operations for the purposes of joint planning and operations.

Based on these three assumptions, and armed with the tasking from the Joint Chiefs, the planners proceeded to develop a number of objectives for improving medical mobilization planning. These objectives were broadly grouped into the categories of organizational structure, planning, and coordination. In the area of structure, the planners' major objective was to use existing organizations to achieve a structure that featured both centralized review and oversight and decentralized planning and execution. Such a system would best provide for a flexible response, as directed by Presidential executive orders, Department of Defense (DOD) directives, Joint Chiefs of Staff publications, and service instructions.

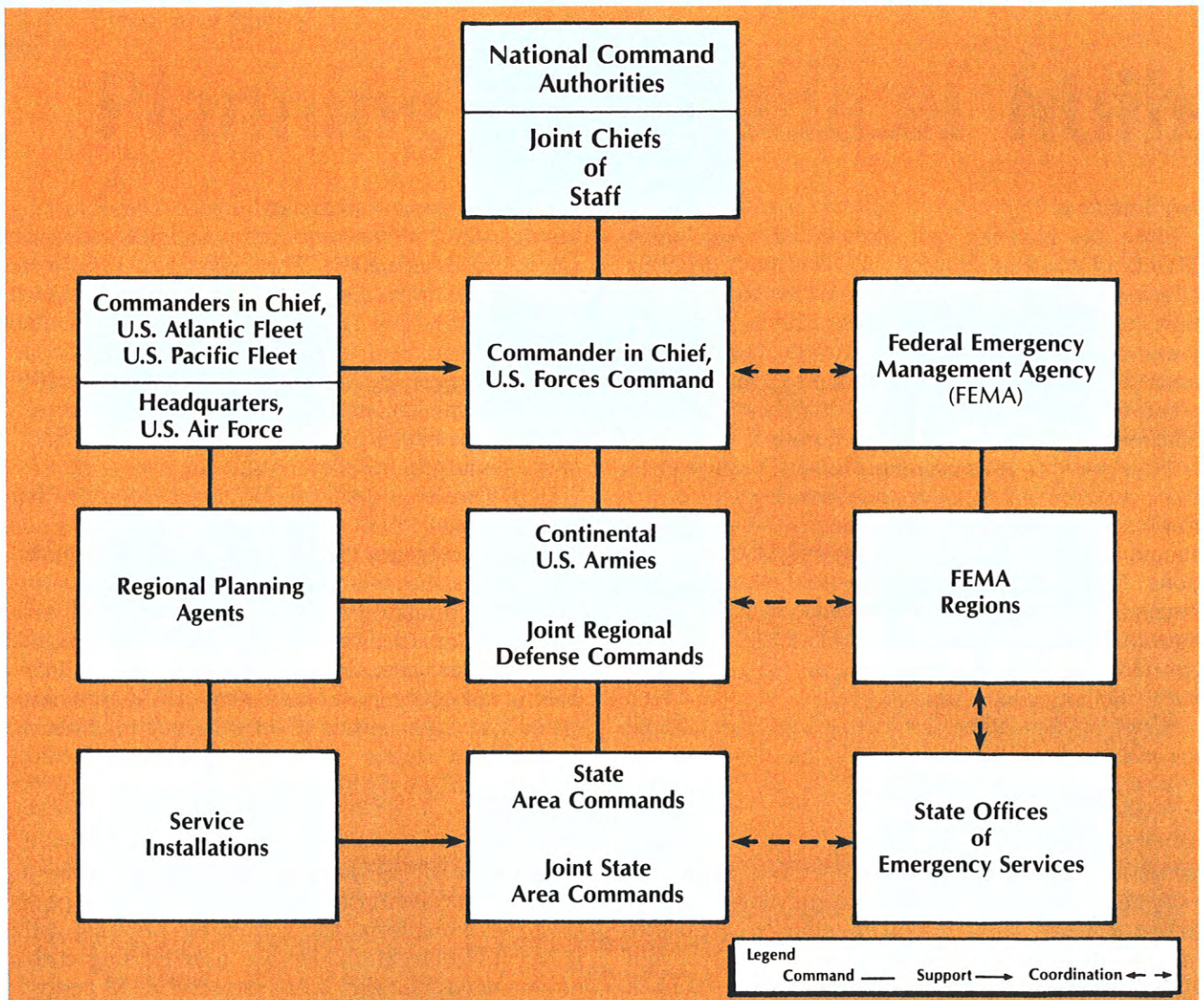
The major objective in planning was to produce an integrated, comprehensive, joint service medical mobilization plan for the United States that would serve as the CONUS component of a worldwide medical mobilization plan. This plan would incorporate procedures for an orderly transition from peacetime to wartime military medical operations that could also be used in responding to major disasters.

Finally, in the area of coordination, the planners had two major objectives: to develop joint policies and procedures for using the health care resources of the military departments in CONUS; and to coordinate with the U.S. Department of Veterans Affairs and the National Disaster Medical System for use of their health care resources in the event of a national emergency.

The next step in satisfying the Joint Chiefs' tasking was to review all existing orders and policies on the subject of mobilization. The key publications were National Security Decision Directive 259, which states that the Civil Defense system will become the planning instrument for all natural and manmade national emergencies, and Executive Order 12656, which assigns national security emergency preparedness responsibilities to the appropriate Federal departments and agencies.

DOD Directives 3025.10 (Military Support of Civil Defense) and 5030.45 (DOD Representation on Federal Emergency Management Agency Regional Preparedness Committees and Regional Field Boards) describe the military structure for planning and providing military medical support in national emergencies under the provisions of Executive Order 12656. The military support of civil defense (MSCD) system offers a two-way means of communication, enabling the civilian sector to request military medical resources when needed and similarly allowing the military to request resources from the civilian sector. The MSCD system also permits communication with other Federal agencies and State governments through the Federal Emergency Management Agency (FEMA). Most importantly from the planning cell's perspective, the MSCD system uses existing chains of command, allowing all of the services to perform joint operations in CONUS under the U.S. Forces Command (FORSCOM) and the continental U.S. armies (CONUSA's). (The chart on page 4 depicts the relationships among the services, FORSCOM, and FEMA.)

The planning cell's analysis indicated that this structure—running from the Commander in Chief of FORSCOM (CINCFOR) to the CONUSA's—provided an existing command, control, coordination, and liaison network that could be used to plan and implement CONUS medical mobilization. Discussions with the CINCFOR's staff confirmed the planning cell's initial perception that CONUS medical mobilization planning was indeed a viable mission for this specified command. However, the CINCFOR made two requests: he wanted a clear tasking from the Joint Chiefs of Staff and the resources needed to carry out that tasking. On 30 September 1988, the Joint Chiefs approved a change to the joint strategic capabilities plan that makes the CINCFOR responsible for developing,



□ The military support of civil defense structure (shown above) provides a command and control system for CONUS medical mobilization.

maintaining, and implementing an integrated CONUS medical mobilization plan. This same action directed each of the services to assign one medical planner to the CINCFOR's staff and one to each CONUSA.

At the same time, the Deputy Directorate for Medical Readiness (DDMR) was organized on the Joint Staff to deal with those issues that are inherently the responsibility of the Chairman of the Joint Chiefs of Staff. The DDMR, which replaced the Deputy Directorate for Medical Mobilization, consists of a deputy director (a general or flag officer) and a planning staff of 10 officers. The DDMR staff provides liaison on a national level with DOD, Federal, and non-Federal civilian agencies, including the U.S. Transportation Command, the U.S. Department of Transportation, FEMA, the Department of Veterans

Affairs, the U.S. Department of Health and Human Services, and the National Disaster Medical System. The DDMR also provides guidance to the CINCFOR in developing the integrated CONUS medical mobilization plan, serves as the focal point for Joint Staff coordination of medical matters, and reviews joint service resource capabilities for performing the CONUS medical mobilization mission.

Working at their different levels of authority, the DDMR, FORSCOM, and the CONUSA's now cooperate to perform a wide variety of functions, all aimed at ensuring that CONUS medical resources are ready for mobilization. These functions include—

- Managing medical mobilization activities to meet the policies, plans, programs, standards, and procedures established by the Office of the Secretary of

Defense and the Joint Chiefs of Staff.

- Developing and maintaining the integrated CONUS medical mobilization plan to ensure maximum effective use of medical resources remaining in CONUS during and after mobilization.

- Continually reviewing the resources available for providing health care in CONUS during mobilization and the projected CONUS medical work loads to determine CONUS medical requirements. Assessments of medical resources and recommendations on medical priorities are made to the next higher authority.

- Coordinating with Federal and civilian agencies, such as FEMA, the Department of Veterans Affairs, the Department of Health and Human Services, and the National Disaster Medical System. As part of this coordination, the status of each Department of Veterans Affairs and National Disaster Medical System medical facility for participating in CONUS medical mobilization is confirmed annually.

- Identifying and resolving issues and conflicts involving medical mobilization through coordination with the appropriate service agent. Issues that cannot be resolved are referred to the next higher authority.

- Providing recommendations on all CONUS medical mobilization priorities and issues to the next higher authority.

- Providing guidance on the execution of medical mobilization plans to ensure integrated health care operations.

- Monitoring mobilization planning and execution by participating and evaluating performance in joint exercises.

- Coordinating with each service's medical logistics agency and the Defense Logistics Agency for wartime requirements; assessing the capabilities of the agencies and industry to provide required CONUS medical supplies and equipment during mobilization; and making recommendations to the joint industrial mobilization plan.

- Reviewing medical mobilization-related joint training requirements and medical readiness training initiatives; recommending potential areas for joint training; and coordinating medical mobilization training with FEMA, the Department of Veterans Affairs, and the Department of Health and Human Services.

- Working with appropriate agencies to identify primary and alternate airports and seaports to which returning casualties may be directed and establishing a system at those locations for receiving patients and moving them onward. Airports and seaports are also identified for use in staging and uploading supplies and equipment designated for theater medical operations.

- Developing a system for tracking military patients

through the entire CONUS health care system and ensuring that procedures exist for returning personnel to duty as quickly as possible.

- In coordination with the executive agent and the Armed Services Medical Regulating Office, ensuring that a joint medical regulating office is established at each CONUSA.

All of these activities are designed to help the Joint Staff, the CINCFOR, and the services accomplish the enormous task of ensuring that the military medical assets remaining within CONUS during mobilization are used effectively and efficiently. Since these assets are not sufficient to provide adequate levels of care for all returning casualties, the resources of the Department of Veterans Affairs and the National Disaster Medical System are critical to meeting the CONUS requirement. However, these systems must be integrated to provide for adequate care and disposition to meet DOD needs. That is a major purpose of CONUS medical mobilization planning.

The medical system, by returning wounded soldiers to duty, controls the largest trained-manpower replacement pool available to the warfighting CINC's. A well-organized CONUS medical mobilization plan that facilitates the prompt return of soldiers to duty can increase the size of the replacement pool available to the CINC's and serve as a deterrent to our potential adversaries. Medical planners must plan carefully to make this contribution, just as all logisticians must develop their operational capabilities through a deliberate planning process.

The ultimate power of good planning was most appropriately stated over 2,500 years ago by the famous Chinese philosopher Sun Tzu. His sage advice certainly remains valid—

The general who wins a battle makes many calculations in his temple before the battle is fought. The general who loses a battle makes but few calculations beforehand. Thus do many calculations lead to victory, and too few calculations to defeat.

Major George S. Tolson, USA, is currently assigned to the Medical Mobilization Division, J4, The Joint Staff, as the strategic plans officer. He has previously served as the plans officer, Office of the Surgeon General, Headquarters, Department of the Army; executive officer of the 10th Medical Battalion and the 8th Combat Support Hospital; and instructor of military science at the Academy of Health Sciences. Major Tolson is a graduate of the Army Command and General Staff College.

Managing CSS Unit Training

by Lieutenant Colonel Gilbert S. Harper and Lieutenant Colonel Robert J. Ross

No other single subject has, over a long period, generated quite the comment as that associated with the training of combat service support units—both commentaries and feature articles. In this article, the authors outline a method for balancing divergent training demands.

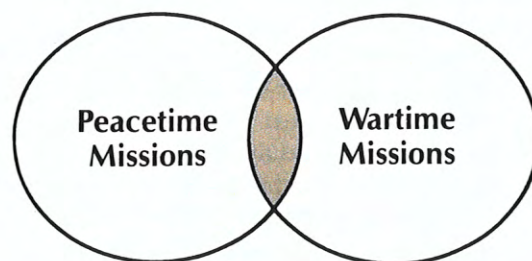


To paraphrase Will Rogers, training in many combat service support (CSS) units is too often “one-third action and two-thirds explanation.” This is largely due to the fact that it is more difficult to plan and conduct battle-focused training in a multifunctional support battalion than it is in any other type of military unit. All units have numerous mandatory training requirements, such as physical training, marksmanship, and military justice, and all commanders are responsible for training soldiers in common tasks. However, commanders of CSS units have the least flexibility in initiating a full range of training opportunities. These commanders have a significant challenge in spanning the gap between the peacetime mission and wartime mission requirements.

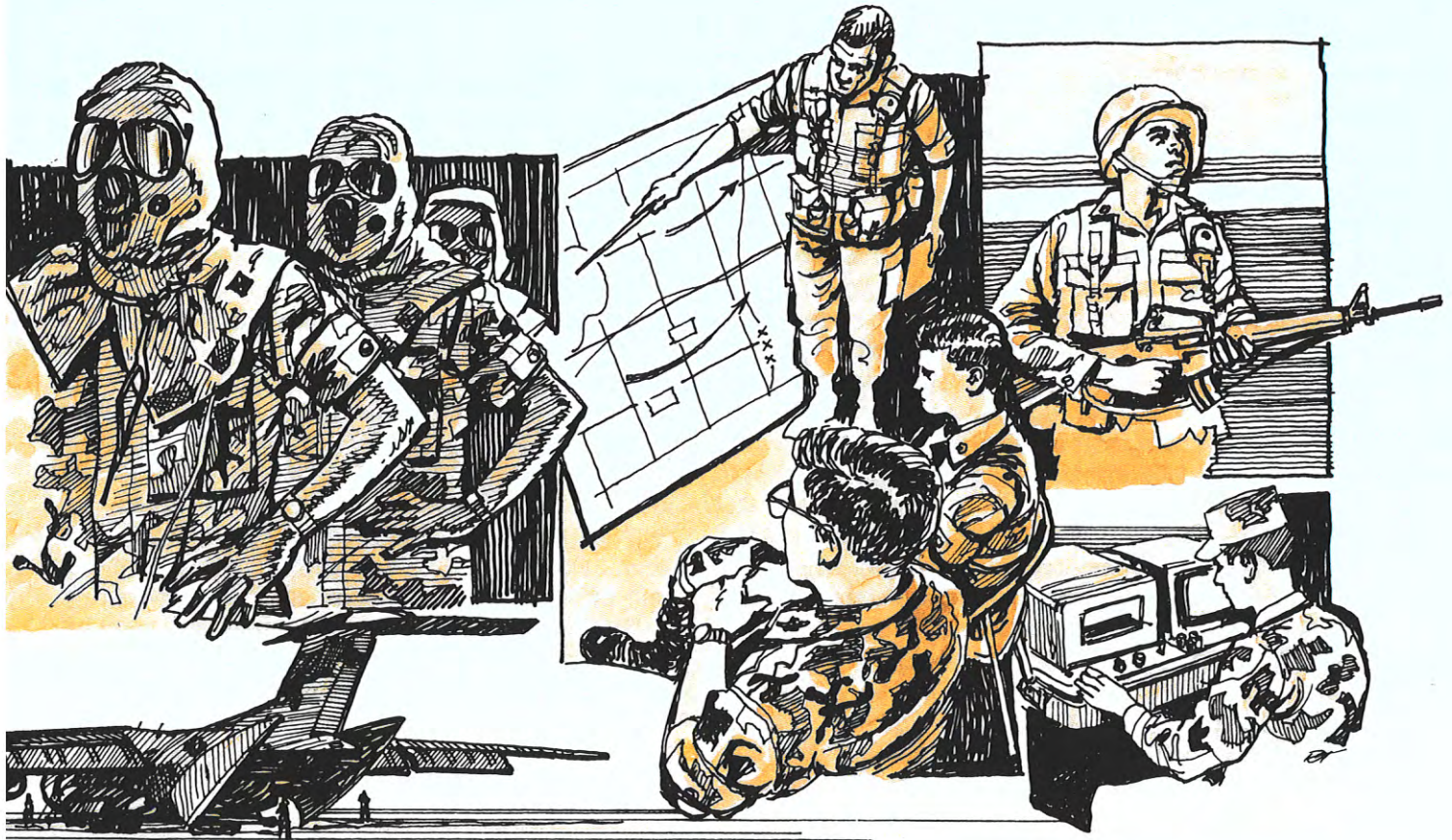
Companies in support battalions have completely different missions, such as equipment maintenance, health services, transportation, supply, and field services. These diverse missions require proficiency in a broader range of collective tasks and corresponding leader and individual tasks. For example, a combined arms battalion (light) has about a dozen different military occupational specialties (MOS's), while the supporting multifunctional support battalion has nearly 10 times that many. This means that low-density MOS training is the norm instead of the exception, and that expertise in specific MOS's must often be sought outside the battalion.

Everyone who has attended an officer advanced course or training management course has seen a diagram such as the one below, depicting the small overlap of peacetime and wartime missions. Support battalions, in particular, are required to continuously accomplish numerous “real world” support missions. Many of these missions have only limited application to critical wartime tasks. Soldiers must spend a considerable amount of time on some tasks to the detriment of training proficiency on others.

Consider a team of direct support (DS) mechanics, for example. The time spent replacing the first couple of engines each quarter constitutes worthwhile sustainment of training on a critical wartime task. But time spent on the 10th engine in the same month does not. The marginal return of training diminishes, while



□ The area of overlap will vary with the type of unit and mission.



the peacetime requirement remains the same. Ideally, civilian mechanics would perform the jobs that are not necessary to sustain MOS proficiency, thereby freeing divisional soldiers to train on other critical tasks; resource limitations, however, often make this impossible.

How can CSS commanders maintain their units' abilities to accomplish critical wartime missions under existing resource constraints?

The Army has established sound training guidelines in FM 25-100, *Training the Force*. As battalion commanders, we often develop methods to implement these guidelines and close the gap between wartime training requirements and peacetime mission requirements in an environment of constrained resources. Improvised methods were used in the 193d Support Battalion, Panama, and in the 99th Support Battalion, 9th Infantry Division (Motorized), Fort Lewis, Washington. Interestingly, the original methodology closely paralleled today's doctrine for mission analysis and training management, and the current application fully implements FM 25-100.

The first step prescribed by FM 25-100 is to gain battle focus by analyzing the unit's wartime mission and defining specific mission-essential tasks. Since a unit cannot train to standard on every possible task, battle focus allows the unit to concentrate on those tasks that are vital to the wartime mission and to

Prioritized List of Task Categories

Priority	Category of Task
1	"A" task considered "untrained."
2	"A" task not yet rated.
3	"A" task considered to "need practice" or one that was considered "trained" but not evaluated within the last 12 months.
4	"B" task considered "untrained."
5	"B" task not yet rated.
6	"B" task considered to "need practice" or one that was considered "trained" but not evaluated within the last 12 months.
7	Maintaining proficiency in "A" tasks considered "trained."
8	Maintaining proficiency in "B" tasks considered "trained."

prioritize resources accordingly. Battle focus guides planning, execution, and assessment of the training program.

Much can be learned about training by reviewing the experiences of two support battalions, both with different missions. As a multifunctional unit, the 193d

Support Battalion was responsible for a very broad mission—"Provide direct support-level supply, maintenance, transportation, and field services to designated combat and combat support units in low-intensity conflict operations throughout the Southern Command."

The 99th Support Battalion's tactical mission was somewhat different—"Deploy by air, rail, and sea to provide direct support-level supply, maintenance, and health services support to a motorized brigade combat team during staging, establishment of a lodgement, combat operations, and rapid deployments in defense of key installations. Plan and conduct defense of the brigade support area."

Each unit was responsible for providing support in garrison and during training exercises, but we both recognized the need to develop training programs that maximized the units' abilities to accomplish their tactical missions. In each case the program began with careful review of the tactical mission and analysis of those essential tasks that, when taken together, comprised the mission.

Mission-Essential Task List

The mission-essential task list (METL) is based on detailed analysis of missions, external directives, and applicable Army training and evaluation programs (ARTEP's). Battalion-level battle tasks are developed from the company METL's. Associated with each battle task are collective tasks from the ARTEP. (In the case of the 193d, several additional tasks were added to accommodate nonstandard missions.) Noncommissioned officers (NCO's) then determine the individual tasks (mandatory, common, and MOS) necessary to perform each collective task.

In implementing the program, it became obvious that there was more than the training calendar could accommodate. A host of mandatory training subjects exacerbated matters, as did required fatigue duties. Therefore, it was absolutely necessary to categorize ARTEP tasks according to their importance to the unit mission and prioritize limited training resources in order to ultimately accomplish proficiency in mission-essential tasks.

"A" tasks were those essential to mission accomplishment. In the 193d Support Battalion, field sanitation was an example of an "A" task, as was nuclear, biological, and chemical (NBC) defense operations in the 99th Support Battalion. "B" tasks were those important but not mission-essential tasks. Examples included NBC defense operations in the 193d Support Battalion and field sanitation in the 99th Support Battalion.

Note that field sanitation was an "A" task for the 193d Support Battalion but a "B" task for the 99th Support Battalion. The 193d expected to perform its war-

time mission in an unforgiving tropical environment, where poor field sanitation could quickly render a unit unable to perform its mission. While still important, the same task had a lower priority in the 99th because areas in which it expected to operate were less disease ridden. Similarly, NBC defense operations was an "A" task for the 99th while a "B" task for the 193d because of the difference in expected capabilities of likely opposing forces. Hence, similar units can have significantly different training priorities based on their expected wartime missions.

Assessing Training Proficiency

With an assessment of the relative importance of each task to the unit's mission, commanders are a step closer to effectively allocating training resources, such as time, fuel, ranges, and ammunition. Now, they must assess the unit's proficiency in each task and prioritize training against unit weaknesses.

FM 25-100 and unit ARTEP's give an excellent explanation of how to evaluate unit proficiency and provide these simple ratings—

"T"—Trained

"P"—Needs practice

"U"—Untrained

"?"—Unknown

In the 193d Support Battalion, the company commander, first sergeant, platoon leader, and an NCO subject matter specialist evaluated each section's task proficiency using the scale above. Points were assigned as follows: trained, 2 points; needs training, 1 point; and untrained, 0 points. The sum for all rating points was then computed.

A task rated "T" by each of the four evaluators was assigned eight points. A task rated "T" by the commander and NCO specialist but only "P" by the first sergeant and platoon leader received six points. If one of the leaders could not evaluate a task, the scores were prorated. The 99th Support Battalion used a less formal approach in its evaluations. Key leaders' consensus of task proficiency was used.

After each task was assessed, training priorities became fairly obvious and were based on importance of the mission and proficiency in each task. (See list on page 7.)

Now, subordinate commanders saw light at the end of the tunnel. Here was a disciplined methodology that helped them apply two principles of war, mass and economy of force, to their training program. Resources were massed against high-priority, low-proficiency tasks. Minimum resources were allocated against lower priority tasks or for sustainment training on tasks in which the unit was already proficient.

Planning

One purpose of assessing training is to identify weak areas. Hence, assessment is to some degree overhead. While it provides important data for managing the training program, the resources spent should be minimized by taking full advantage of training opportunities. A detailed calendar review will disclose some events that are already resourced by other units, such as an infantry battalion ARTEP, that can provide inexpensive task training opportunities. The most expensive events are those that the CSS unit has to plan, resource, and conduct entirely on its own.

It is obviously easier to evaluate tasks performed as part of the daily mission or in a scheduled exercise than to create an exercise to evaluate the task. Many combat support and CSS units do not have sufficient resources or cannot free themselves from the "garrison" missions of support and administration to conduct an independent exercise such as an ARTEP. For these units, it is necessary to conduct the ARTEP 52 weeks a year, evaluating tasks independently or in small groups as opportunities present themselves.

A long-range planning matrix was used to schedule the evaluation of priority-1 tasks (see chart below). Known future events were shown as column headings. Commanders studied each event for training opportunities and the need to train on those tasks, then scheduled evaluations during the events. For example, if the commander knew the unit would be involved in a field exercise in March, he analyzed the exercise to determine which of the unit's priority-1 tasks could be evaluated during that exercise. The final selection of tasks for evaluation was based on the unit's proficiency in each task and the time since the last evaluation. In the training matrix, an "X" denotes that the task will be evaluated during the appropriate exercise. In the 193d Support Battalion, this matrix spanned 24 months, was updated quarterly,

and was produced on the computer for each company.

We always sought to schedule tasks in the order of training priority. Training a lesser priority task should *never* jeopardize training a higher priority one.

Note that in the planning matrix, task 1-II-4 cannot be evaluated in the upcoming exercises. Evaluation requires a special event which normally consumes the most resources. One would hope that sufficient resources have been saved through prioritization and by taking advantage of training opportunities to handle the special cases.

The short-range training calendar was developed from the long-range planning matrix. To ensure the unit or section could excel in performing the collective task, classes, individual training, and other preparations were conducted 6 to 8 weeks before evaluation.

Effective training is a dynamic process, and management records have to be continuously updated. Manually recording and updating all the data necessary for effective training can easily overwhelm a company or battalion training section. The 193d Support Battalion developed automated records using a data base with the training management computer system (TMCS) to reduce this administrative burden. Subsequent fielding of Zenith computers allowed the 99th to use that system. After an initial investment of time to establish the baseline data, benefits quickly accrued. The following monthly printouts were produced that displayed information in three formats—

- *Worksheet.* This printout listed tasks in numerical order. Units annotated changes to entries and returned a copy to the battalion S3 for updating the data.
- *Proficiency.* Tasks were listed in order of proficiency, the least proficient being first. This enabled the company commander to readily identify those tasks in which his unit or subordinate sections were least proficient and to establish training priorities.

Long-Range Planning Matrix

Required Training Frequency

Tasks		Exercises				Third Quarter	Fourth Quarter
Category	Task	First Quarter		Second Quarter			
		Exercise 1	Exercise 2	Exercise 3	ARTEP		
A	1-II-1		X		X	None	None
A	1-II-2	X					
A	1-II-4						
A	1-IV-2			X			

- *Evaluation date.* Tasks were listed in order of the date of the last evaluation, oldest first. This enabled the company commander to readily identify tasks which had not been recently assessed and in which units may no longer be proficient.

While this system is ahead of its stubby pencil predecessor, there is room for improvement. After experience, reflection, and study of the recently published FM 25-100, we have developed ideas for further applications. These ideas would minimize training and personnel costs and maximize—

- Training effectiveness.
- Responsiveness to change.
- Accuracy of evaluation and records.
- Ease of operation.
- Flexibility.
- Accommodation of priorities.

We must assume that effective and efficient training will continue to be constrained by resources, the most critical of which is time. There are an unlimited number of claimants for a unit's training time. Quantifying the requirements and making time available for them are extremely difficult tasks. To accomplish the goals listed above, any future system should—

- Compare adjusted availability of training time against requirements for training time. The system should also identify and quantify all time requirements for collective, common, MOS, and other command-peculiar tasks, and identify and quantify time resources.

- Identify and quantify training multipliers and divisors, such as availability of highly skilled NCO's and adequate training facilities.

- Develop and present training schedule options based on command-designated variables, such as priority of training requirements, mutual dependency of training requirements, known external events such as national holidays, availability of facilities, fund constraints, availability of equipment and supplies, and unit and individual training proficiency. The system should also electronically disseminate command-approved training schedules, automatically integrate changes in any of the variables to the training schedule, and alert users that a change has occurred.

- Prepare programs of instruction and training and evaluation outlines for instructors on scheduled topics.

- Manage training records. The system should record, calculate, and store training status information and prepare training reports, such as percentage of

soldiers qualified by each organizational level for weapons qualification, skill qualification tests (SQT's), common task tests (CTT's), and Army physical fitness tests (APFT's). The system should also record unit proficiency in collective tasks and interface data with other automated systems to perform such functions as integrating training status information into the unit status report and adjusting ammunition records.

- Identify school allocations and unit requirements in order to prepare school applications.

Ultimately, a division's overall training management system could consider the proficiency of each soldier in terms of SQT, CTT, APFT, marksmanship, and NBC scores, as well as unit collective task proficiency to establish planning factors used in command post exercises. Soldiers' scores would roll up by unit into the combat power factors crunched by the joint exercise simulation system (JESS) during divisional ARTEP's. Divisions with well-resourced, effective training programs would see results reflected in their division's overall effectiveness as portrayed by JESS.

Commanders must derive optimum benefit from limited training resources in order to maximize their units' ability to accomplish tactical missions. Since training requirements always exceed training resources, commanders have to consciously prioritize training tasks and use resources smartly. Battle focus is a logical, disciplined methodology for managing CSS unit training.

ALOG

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Total Quality Management in AMC

by Tim Overstreet and Ben Pessel

Total quality management (TQM) has been accepted by the Army Materiel Command (AMC) as a proven strategy for achieving excellence in everything we do. This includes attaining the high quality required for the production and logistics support of weapon systems and equipment at a realistically affordable cost. Production and logistics support include every activity within AMC and involve every manager and worker, from packers and mechanics at the plants and depots to the commander of AMC. TQM is grounded in a philosophy of continuously improving performance at every level and in all areas of responsibility.

TQM combines fundamental management techniques with the statistical evaluation of process or system performance for identifying improvement opportunities and for measuring the results. The process

or system is the arena in which the workers perform their specialties. It is composed of the people in the organization, the machines or equipment they use, and the procedures they must follow.

Making TQM successful involves—

- Extensive training at all levels of the organization from top managers to the newest worker.
- More active employee involvement, also known as participative management.
- A change in management culture.

Rather than discuss all of these topics or give a general overview of TQM, we want to focus on what we believe may be a major barrier to the effective adoption of AMC's new way of doing business—management's reluctance to accept the new TQM philosophy.

If quality is our prime concern and if a goal of continuous improvement of products and services is taken seriously, then improvements in quality of life and quality of the workplace must be addressed. We are suggesting that for TQM to produce improved products and services, the people involved in the production of those products and services must work in a secure, nonthreatening, *supportive* environment.

What do we mean by a supportive environment? It starts with a lack of fear in the workplace. Fear is a feeling of powerlessness in the worker brought about by a manager who believes that a person needs coercion to do something. Fear is also caused by a manager who does not truly listen to the worker's ideas—yet who better knows about problems or non-value-added steps than the worker?

A supportive workplace creates an atmosphere that encourages workers to make reasonable suggestions for improvement with the expectation that management will listen to them and implement many of their suggestions. It is a place where workers are encouraged to act as a team and to think as a team with a long-term perspective for the betterment of the organization, a place where they are motivated to cooperate and pool their ideas and to generate meaningful dialogue with management in suggesting ways problems can be resolved. At Toyota, for example, 5,000 employee suggestions are implemented each day (which averages to 37.2 per worker per year).

A supportive job environment is one in which management does its best to remove unnecessary barriers in the paths of workers who try to do something reasonable to improve the organization's procedures or products or services—even if it goes against the *accustomed way of doing business*. If a standard procedure or local regulation becomes an obstacle to continuous improvement, the supportive manager takes the time to try to get it changed.

DOD 5000.51-G, Total Quality Management: A Guide For Implementation (6 January 1989 draft version), states that—

TQM should actively involve all people in the improvement process and empower people to make decisions within their area of expertise to not only do the work, but also improve the system The ultimate objective is to empower the work force to exercise self-direction while pursuing improvement strategies on routine work as well as on special projects.

Continuous improvement cannot take place in the workplace unless management provides the leadership that will allow the worker to participate. As Dr. Myron Tribus, a TQM expert at the Massachusetts Institute of Technology, points out, the workers are *in* the system. They can observe it and propose changes. Only the manager works *on* the system and can judge and implement the changes with the workers' help.

Who assigns the workload? Who establishes the deadlines? Who creates the working conditions? Who provides the equipment to be used? Who establishes the work standards and procedures? Who hires the workers? Who is responsible for the worker's training? Who provides the supplies that are used? Who evaluates the work and the worker? The answer to each question is management. This is why we say that only management can change the process, that only management can cause an improvement to be *implemented*. The worker can study, suggest, and design an improvement to the system, but only management can authorize that change be made.

Who is included in management? Management includes *anyone* who is part of the organizational hierarchy from the first-line supervisor to the commander of AMC.

Since management is responsible for how work is accomplished, management is also responsible for making any required changes. Indeed, as we have indicated, only management *can* make the required changes.

Dr. W. Edwards Deming, DOD consultant and pioneer in TQM, has suggested that 94 percent of the time a process problem is either caused by management (or the system) or requires an action by management in order to correct the problem. This does not mean that management *is* the problem; rather, it means that only management has the authority to implement a change that will improve the process and alleviate the problem. Anytime a problem arises, 94 times out of 100 management must accept the responsibility for it and solve it.

For example, the Army Missile Command (MICOM) has automated its low-dollar-value-study process. Low-dollar-value studies can be completed on a computer terminal without a need for a printed copy. After more inventory managers are trained to use the automated supply-control-study process, much time will be saved. Using the automated method can reduce the time for completing a low-dollar-value study from a few hours to only a few minutes. Only the involvement of MICOM's managers enabled the new system to be implemented.

Managers in the Logistics Directorate, Army Communications-Electronics Command, listened to their workers and redesigned the appearance of the directorate's offices and furniture. They also established a quality council to find ways to implement workers' suggestions. The results have been higher productivity with greater accuracy and reduced sick leave usage.

All problems are not monumental. The solution may be as simple as rearranging desks so that the paper flow in the office travels more smoothly. It may involve using a drill bit with a different tip than is currently being used in a depot maintenance shop. It may be that an altered method of chemical plating will produce a better quality exhaust pipe. Workers can discover the problems. They can suggest solutions. But only managers can give the go-ahead.

The heart and soul of TQM is the philosophy that managers must learn to provide a process or system that allows their workers to do the best work that they possibly can do. This requires a manager who encourages the worker to challenge the status quo. A supportive manager will welcome the worker's input without feeling that complaints and suggestions about the system are a personal criticism. The TQM manager does not perceive the messenger of a problem *as* the problem. The supportive manager recognizes that his unwillingness to help solve a problem or hesitancy in allowing the worker self-direction in the improvement process *does* become part of the problem.

In our interviews with managers, we found that many (though certainly not all) believed management should be responsible for solving problems. However, we also found that they considered management to include only those people in the organizational hierarchy who are at levels higher than they. They believed that they must continually solve problems created by those managers who are above them, but they seldom saw themselves as part of the problems encountered by anyone below them in the organization. In essence, they did not accept responsibility for the problems they helped create and, therefore, often

would not attempt to solve them.

We all like to see ourselves as part of the solution and not part of the problem. But we can only become a part of the solution when we accept our share of the responsibility and actively participate in seeking solutions.

How many times has a worker gone to his supervisor with a problem only to be told that if he just tried harder he could solve the problem himself! If the worker could solve the problem, he probably would have already solved it. For TQM to work, managers must accept their responsibility for most of the problems and, with the help of the worker, seek ways to eliminate them.

In Search of Excellence author Tom Peters said on a recent video tape, "We must become quality fanatics." And quality must begin with management creating a system that allows workers to do their best quality work.

How do we make TQM work? To summarize, we believe that—

- Management must accept its responsibility for most of the problems in a process.
- Quality must come first in decision making.
- People must be viewed as our most important asset and must be involved in changing the process.
- We must seek continuous improvement of all processes.
- We must recognize who the customers are and what their requirements are.

Participation of the worker is crucial to the continuous improvement process of TQM. But only the manager can make the decision to share the responsibility for quality products and services with the worker. Each day a manager should ask himself, "What have I done to improve the process today?" This would serve as a pointed reminder that management has the responsibility to change and to improve the environment in which the worker must perform.

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Using Risk Decision Analysis To Solve Contractor Protests

by Herbert F. Kelley, Jr.

The author explains how to use risk decision analysis to determine the corrective action to take in GAO protests.

Traditionally, protests by actual or prospective contractors whose direct economic interests are affected by alleged improprieties committed in the course of Federal Government procurement of supplies or services have adversely affected Government functions more than most other legal actions relating to procurement. When a dispute arises between a contractor and the Government, or when the contractor files a claim for monetary relief under his contract, the work usually continues unabatedly. This is often not the case with contractor protests.

The impact of contractor protests on the Government's mission was significantly exacerbated when the Competition in Contracting Act (CICA) was applied to protests in 1985. In the case of a protest filed with the General Accounting Office (GAO), the act prohibits contract award until GAO resolves the protest, unless award is approved by the head of the procuring activity. This act also requires a Government agency to stop the performance of a contractor when GAO notifies the agency of a protest within 10 calendar days of contract award, unless performance is approved by the head of the procuring activity. This legislative interest in the protest process has made GAO more likely to provide remedial relief to the protester when sustaining or granting a protest. Remedial relief usually has an adverse impact on the agency's ability to obtain the supplies or services being procured under the protested procurement.

Considering the serious effect a GAO protest can

have on a procurement, how should one approach a situation where the protest appears to have merit? Should a defense be attempted although it probably will not succeed, or should corrective action in the form of providing the protester the relief he requests be taken by the agency, thereby rendering the matter academic before GAO and achieving dismissal of the protest? The current protest situation is such that practical considerations dictate taking corrective action whenever the protest appears to have merit, provided mission considerations do not preclude taking the action.

In GAO protests, the principles of risk decision analysis can be adapted to determine the corrective action to take in any given case; this, in fact, constitutes the only rational approach to the problem. The effective use of this approach requires an intimate knowledge of—

- The protest process, both from the standpoint of the substantive and procedural law of the forum before which the matter stands.
- Federal contract law in general.
- The workings of the particular agency's bureaucracy.
- The relative urgency and importance of obtaining the supplies or services being procured.

Risk decision analysis is appropriate when the decision maker does not know in advance the result of selecting one alternative rather than another. Using this process, the decision maker cannot make a



rational decision until he has assessed the probabilities for each factor of the alternatives.

A situation that I recently encountered illustrates how complex the process of considering corrective action can be and also how useful a risk decision analysis can be in completing that process.

The situation involved a contracting activity that was conducting a sealed-bid procurement for laundry service in a Government-owned, contractor-operated (GOCO) laundry. After bid opening, the contracting activity discovered that the estimated quantity given for 1 of the solicitation's more than 400 bid line-items was in error. The incumbent contractor, the second-low bidder, filed a protest with GAO contending that the low bid was materially unbalanced and therefore should be rejected as unresponsive. The protest pointed out the incorrect quantity problem and contended that the contract award should be made to the protester.

Incumbent service contractors are notorious for filing GAO protests so they can continue performing their contracts while their protests are pending. I have found that many of these protests are frivolous.

As defined by GAO decisions, there are two steps needed to determine if a bid is materially unbalanced and therefore subject to being rejected as unresponsive. The bid must first be mathematically unbalanced in that it is based on nominal prices for some of the contract work and enhanced prices for other work. If a bid is found to be mathematically unbalanced, the

bid may not be rejected unless it is also materially unbalanced. A contract awarded to such bidder would not result in the lowest overall cost to the Government.

In the GOCO contract, the contracting officer believed the quantity error in the bid solicitation required her to cancel the original solicitation and issue one specifying the correct quantity. She canceled the solicitation. She expected the notice of cancellation to the bidders to result in the protest being dismissed by GAO. Looking at the probability of GAO dismissing the protest in this situation, anyone familiar with GAO decisions would fix a ratio of 100:0, with the 100 representing the chance that GAO would dismiss the protest as academic.

To complicate the situation, the low bidder protested the cancellation of the solicitation. (In view of the multimillion-dollar value of the procurement, the contracting officer should have assumed before canceling the solicitation that the low bidder would protest.) The third-low bidder protested the cancellation and supported the low bidder's position. With two of the three protests before GAO against the cancellation, summary dismissal of all three protests could not be achieved simply by taking the position that the solicitation's cancellation mooted the protests.

The erroneous quantity involved in the incorrect bid item of the solicitation was quite minor in relation to the other 423 bid items, and the other bidders would in no way be prejudiced if the contracting officer were

to substitute the correct quantity in calculating the low bid. The low bidder's price would remain low even when the prices were evaluated using the correct quantity. The vast majority of the agency's needs would be met by awarding a contract calling for the erroneous quantity of 67 instead of the 2,067 required in the line item. The contract could then be modified to require the contractor to provide the larger quantity of required laundry services.

In deciding on a course of action to take in this complex situation, a decision maker could use risk decision analysis. The process would proceed in the following manner.

The first step the decision maker should take is to determine the agency's chance of succeeding before GAO with each available alternative and to set the probabilities for each alternative.

If the decision is to take no corrective action and to defend against the low bidder's protest of the solicitation's cancellation, what are the odds of the agency succeeding in this situation—where the quantity error in the bid solicitation does not prejudice the other bidders and a contract award will fill the agency's essential needs? Based on pertinent GAO decisions, the odds are set at 80:20 to 90:10, with 80 and 90 for the agency.

A decision to reinstate the solicitation and to inform GAO that the agency proposes making an award to the low bidder would moot the low bidder's protest against the cancellation of the solicitation, and GAO would dismiss the protest. Those who are unfamiliar with dealing with GAO protests and lack experience in taking corrective action under protests may question whether or not a canceled solicitation may properly be reinstated, because logic supports the idea that a nonexistent contract solicitation cannot be brought back to life. Yet GAO consistently approves of reinstating canceled solicitations.

The third-low bidder's protest in all probability would also be dismissed because the protester was not in line for the contract award, even if the remaining protest by the second-low bidder were sustained by GAO. GAO's bid protest regulations require that protests be filed by an interested party and defines interested party as ". . . an actual or prospective bidder or offeror whose direct economic interest would be affected by the award of a contract or by the failure to award a contract." In this regard, GAO has consistently held that an offeror who is not in line for award if its protest is upheld is not an interested party.

The initially filed protest by the incumbent or second-low bidder could have been mooted by canceling the solicitation. Also, it probably could have been successfully refuted because the low bid did not appear mathematically or materially unbalanced and the error in quantity did not prejudice the other bidders. The odds here are estimated at about 80:20 in favor of the agency.

The odds seem to indicate that the contracting officer should have reinstated the solicitation and awarded the contract to the low bidder. Yet one cannot arrive at a viable, rational decision merely by considering the probabilities of what will happen in dealing with GAO. Other factors must be considered, such as the "stay" of contract award imposed by the CICA. An award cannot be made without first obtaining an override of the CICA "stay," and only the head of the procuring activity can authorize it. And to worsen the GOCO situation, the agency had already expressed reluctance to approach the approving authority to ask for an override because the approving authority had disapproved their recent requests.

Fortunately in this situation, the Army could continue to provide laundry services by operating the GOCO laundry facility without obtaining a CICA override, because the incumbent contractor, the initial protester, was still performing under an extension of its contract, and the extension would not expire for another month. Yet it would expire before a decision on the merits could be expected from GAO. (In fiscal year 1988, GAO averaged 66 1/2 working days in deciding developed cases.)

Having received additional legal advice concerning pertinent GAO decisions, the contracting officer decided to reinstate the solicitation and to refute the incumbent's protest. The protest alleged that the low bid was unbalanced and that the one bid item in the solicitation contained an incorrect quantity of work. She notified GAO of the reinstatement and her proposed award to the low bidder.

GAO, as expected, dismissed the low bidder's protest as academic. It also dismissed the third-low bidder's protest on the ground that this bidder was not an interested party eligible to file a protest. As a result of this action, only the incumbent's protest remained. This protest argued that the low bid was unbalanced and the quantity of one of the solicitation's bid line-items was in error. In response to this, the agency submitted to GAO an administrative report addressing the matter, and the low bidder's attorneys supported

the agency position by filing their own remarks.

Had the agency resolved all aspects of the problem? One may be inclined to think so because the agency had disposed of two protests it probably could not have successfully defended and now had to contend with only the initial protest, which it believed could easily be defended. If the matter were viewed solely from the agency's legal position before GAO, everything would seem settled.

However, being in a favorable legal position does not satisfy the ultimate goal of an agency faced with protests adversely impacting performance of its mission. The key question concerning mission performance in this scenario is how the agency was going to obtain the needed laundry operation services after the incumbent's contract expired in another month. The contract would probably expire before GAO ruled on the remaining protest.

One cannot simply assume that a disgruntled bidder would agree to extend his contract at a reasonable price. And, even if he does, would the agency be able to successfully defend itself if other protests were filed that contend the agency should go competitive to acquire its interim services, instead of entering into an interim sole-source contract with the incumbent to cover the period of time expected to be consumed by GAO in deciding the protest? Should the agency not make the interim contract competitive, at least among the same offerors that bid on the protested procurement? The odds should be assessed.

If the probability of protest against the interim measure is great and the odds of defending against it are not favorable, the contracting officer should opt to avoid the risk by seeking the approval of the head of the procuring activity to award the original, long-term contract to the low bidder, even though the protest at GAO is still unresolved. But another question arises: What were the odds that the head of the procuring activity will approve this override? In the GOCO example, the head of the activity had recently disapproved the agency's requests. The views of knowledgeable sources at the same level as the approving authority could have provided valuable assistance to the decision maker in determining these odds.

The decision maker should have taken into account additional factors. For example, what should the contracting officer do if GAO sustained the remaining protest and recommended awarding the contract to the incumbent, the second-low bidder? What if, instead, GAO recommended a new solicitation for the serv-

ices? How long would it have taken to conduct a new solicitation, including advertising in the *Commerce Business Daily* and providing sufficient time for additional bidders to prepare their offers?

In the actual protest situation, the decision maker decided not to ask for permission from the head of the procuring activity to award a contract prior to resolution of the protest matter, and the protester continued to perform the contract. Ultimately the protest was denied by GAO, as predicted, and a contract was awarded to the low bidder. The incumbent contractor and the low bidder were both winners and losers. The Government agency won, however, in the sense that it prevailed before GAO and its actions did not adversely impact the integrity of the procurement system.

The situation involving the protest illustrates the difficulty one can face in deciding how to provide remedial relief to a protester and how to achieve dismissal of the protest, rather than simply attempting to defend all protests regardless of the odds against success. One must not only estimate the chances of success or failure for each alternative comprising the analysis, but one must also get individuals having specialized knowledge or experience involved in the process. No one should act alone in reaching a decision. Advice and information are required from the decision maker's attorney, the requiring activity that has knowledge of the agency's needs, and representatives from the procurement and legal communities who are intimately familiar with the GAO protest process and possible overrides of CICA "stays." These individuals are usually at a higher level of the agency than the decision maker.

After concluding that a protest cannot be successfully defended, one should analyze the situation to determine the best corrective action. The decision maker should apply the basic principles of risk decision analysis, including probabilities, and, when necessary, call on knowledge and assistance of legal and procurement experts.

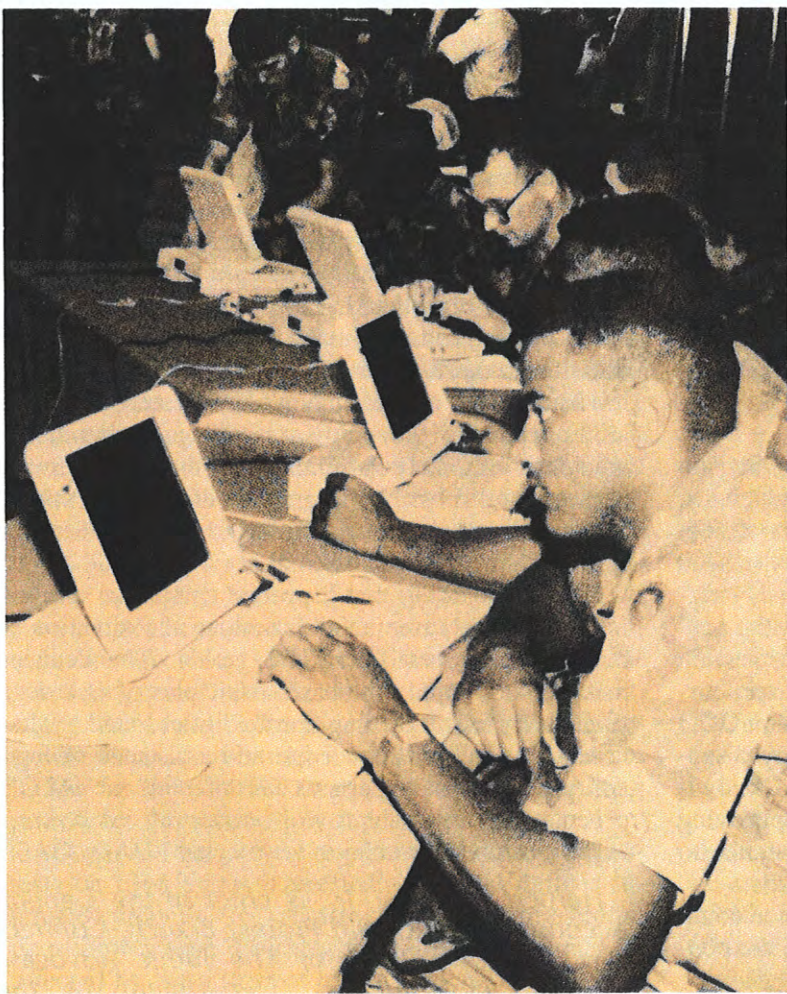
ALOG

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Soldier Support Expo '89

In one corner of the gymnasium, soldiers in battledress uniforms huddled around mannequins sporting new versions of shirts, jackets, helmets, and protective gear. In another corner, two airborne soldiers packed a parachute. Near the entrance, a civilian measured the head of a young private to determine his proper helmet size. Animated voices echoed in the makeshift exhibition hall as boots clumped up and down the partitioned aisles lined with equipment. The smell of fresh-baked bread wafted on the air.

It was the first day of the Army Troop Support Command's (TROSCOM's) Soldier Support Exposition. "Development Together" was the theme for the expo that took place in Fort Bragg, North Carolina's Lee Physical Fitness Center 22-24 August 1989. It was an opportunity for TROSCOM to display old, new, and developmental equipment items and to



ask soldiers what they thought about them.

During the 3-day expo, more than 13,000 officers, enlisted personnel, and civilians engaged in intense discussions as they handled and tested the equipment. The expo was carefully planned to encourage the exchange of ideas among combat developers, design engineers, materiel managers, maintenance experts, and equipment users. By bringing together all of those with an interest in equipment, TROSCOM can improve item quality and effectiveness in the early stages of development when the cost of making changes is lower.

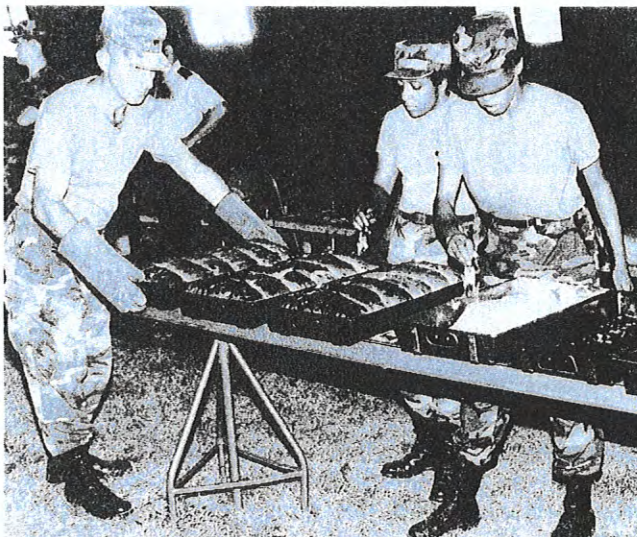
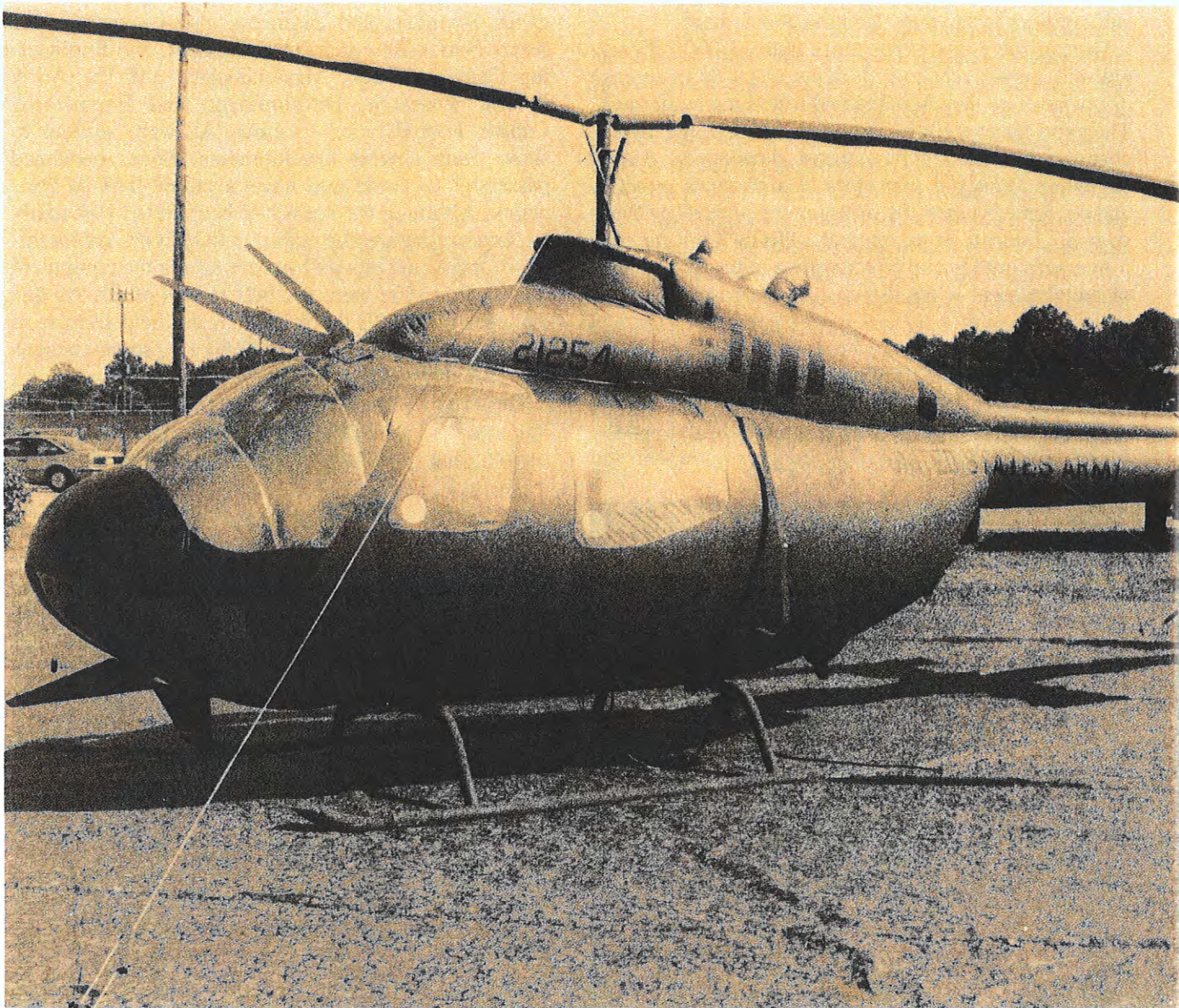
TROSCOM, a subordinate command of the Army Materiel Command, is responsible for the development, procurement, fielding, and support of equipment items that meet the soldier's day-to-day needs. Many TROSCOM project managers attended the

expo. Scientists and engineers also came from the Army Natick Research, Development, and Engineering Center, Natick, Massachusetts, and the Army Belvoir Research, Development, and Engineering Center, Fort Belvoir, Virginia. All were anxious to show their newest developments. Some beckoned passersby to come and have a closer look at their wares. Although the items had been tested repeatedly by experts before the expo, TROSCOM representatives knew that those who were seeing the equipment for the first time were the best testers of all. As one engineer put it, "If the soldier in the field likes it, it is probably good. If he doesn't like it, some changes are probably needed."

The expo focused on special operations forces, light infantry, and air delivery equipment. On the grounds surrounding the field house, displays included



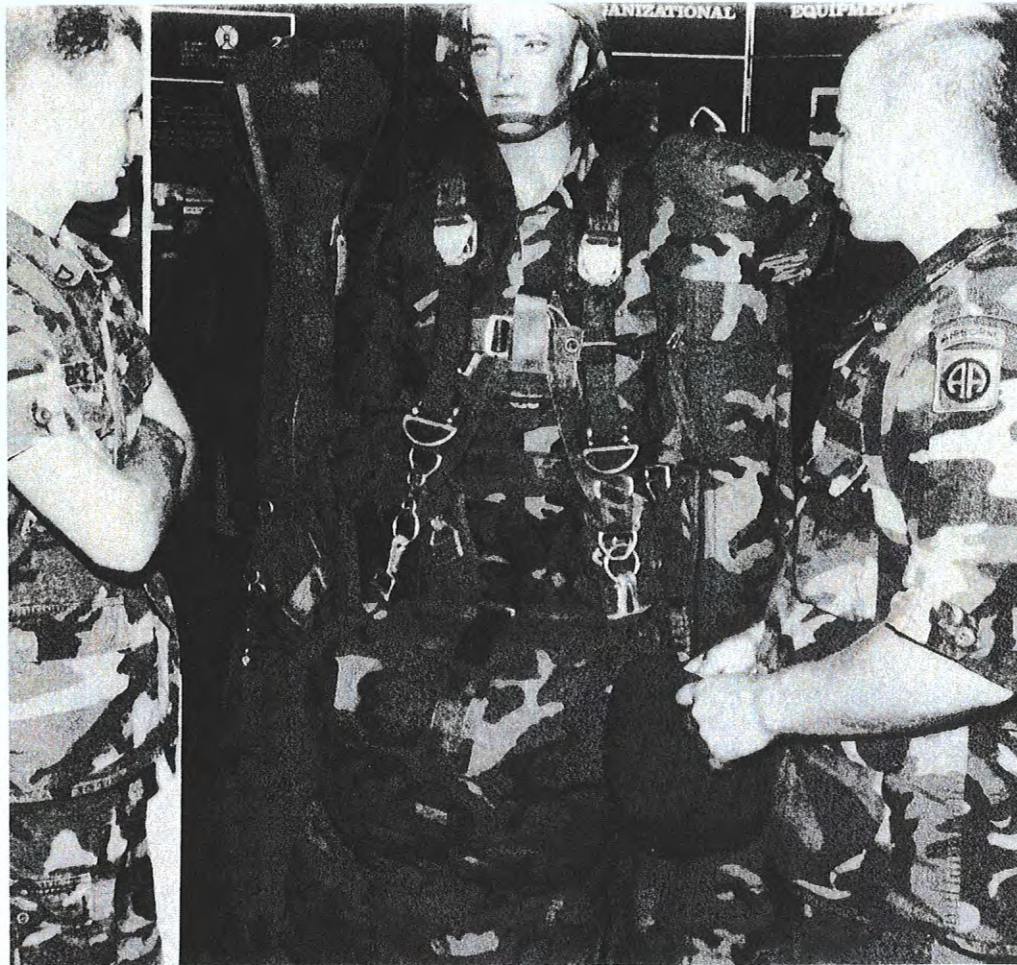
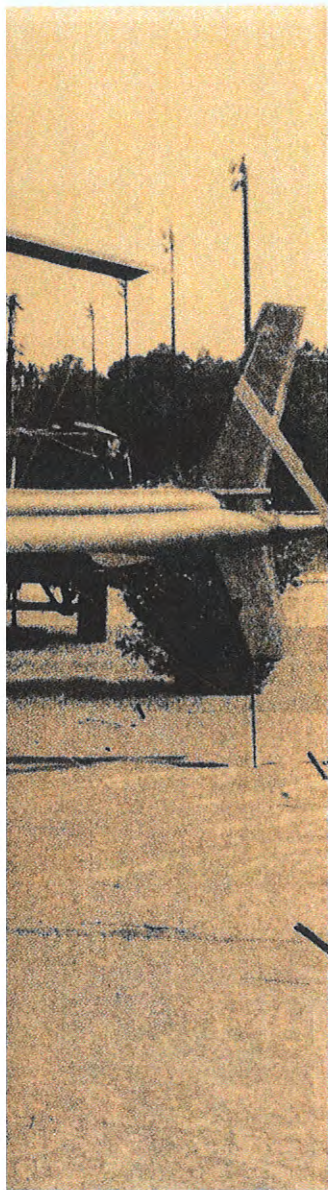
□ Soldiers use laptop computers to answer questions and provide comments about the new equipment items on display at the expo (far left). After trying out new individual protective clothing and equipment items, soldiers discuss the merits of the large field pack and an arctic canteen with a mouthpiece that will not freeze (left). A lightweight aviation refueling system (HTARS) that can simultaneously refuel four helicopters uses quick-disconnect, dry-break couplings (above). The HTARS is stored in the cargo box of an M978 tanker.



medical, water and petroleum, heating and air conditioning, power generation, firefighting, mine sweeping, and deception systems.

The most popular outdoor display was the field bakery. On the first day of the expo, soldiers baked fresh bread and served it to those who stopped by. The next morning baking operations started at 0400 to prepare for visitors who began to arrive at 0900. About 200 loaves of raisin bread and several trays of cinnamon rolls were prepared in 5 hours. Many visitors gathered inside the large, unlit tent and enjoyed quiet conversation as they ate the warm breads.

Displays inside the gym included food technology, clothing, physical security, countermine, bridging, watercraft, aerial delivery, and scuba diving equipment items. Soldiers lingered at the food and clothing displays, passing items around and debating about the



□ At the field bakery, a popular spot during the 3-day expo, troops demonstrate bakery equipment and produce baked goods for sampling (below left). Inflatable decoys are used to delay or detract the Threat. The inflatable OH-58A Kiowa, which has a fabric body and a portable blower to keep it inflated, imitates the visual and thermal signatures of a real helicopter (left). Airborne soldiers check a Stinger missile jump pack and all-purpose containers used to carry weapons and equipment during airborne operations (above).

merits of each. One colonel donned countermining protective clothing items to check them for comfort. At other booths, noncommissioned officers talked about how items could be used in their units and whether or not the items were better than those they already had. A group of soldiers watched intently as a small-scale model of the armored-vehicle launched bridge unfolded, spanned a miniature ditch, and folded again.

After seeing and handling the items on display, soldiers were encouraged to stop at a table strategically placed near the exit. There, they were asked to sit at one of 16 laptop computers and respond to a series of questions regarding the displays they had just viewed. More than 800 suggestions were made by the soldiers who attended the expo.

TROSCOM is currently reviewing and acting on the suggestions, and each comment will be given serious

consideration. Those who provided comments will receive a response for every suggestion they submitted and a letter of appreciation from TROSCOM's commanding general. Although this means a great deal of work for TROSCOM, the staff believes that each soldier who took the time to make a suggestion deserves a personal response. Major General John E. Long, who was TROSCOM's commanding general at the time of the expo, stated, "We want to get the soldier involved in the development process. TROSCOM wants to be sure it's what the soldier wants and needs."

At 1700 on 24 August, the gym was quiet. The expo was over, but the Army had demonstrated its willingness to listen to its troops. And participants were convinced that Army equipment holds great promise for the soldiers of the future.

ALOG

Is American Industry Ready for War?

by Major Robert E. Wegmann

When we were growing up many of us played a game called "King of the Hill." When we got to be king we realized that quite often it took more effort to stay on top of the hill than it did to get there. We can compare this game to the current status of the industrial base of the United States and its ability to mobilize for war.

Many people point out that U.S. logistics support capabilities, which rely on industry at the national level, have steadily declined since World War II to the extent that industry will not be able to support an extended war. While recognizing that the industrial base could be energized to meet emergency needs of the armed services, they believe that industrial mobilization could not be effected in time to adequately sustain our combat forces in the field during a



major war. A worst-case projection is that the base might not be able to fully mobilize because of American industry's dependence on foreign sources for certain raw materials.

One must understand the meaning of several terms to fully understand the problem. *Industrial mobilization* entails the expansion and transformation of peacetime industry to an industrial program that can support the Nation's military objectives. A declaration of national emergency by the President is required before industry can be directed to mobilize. *Surge* is the acceleration of military production for selected items using existing facilities in peacetime and can begin without declaration of a national emergency. A *foreign source* is a source of supply or technology from outside the United States or Canada. *Foreign*

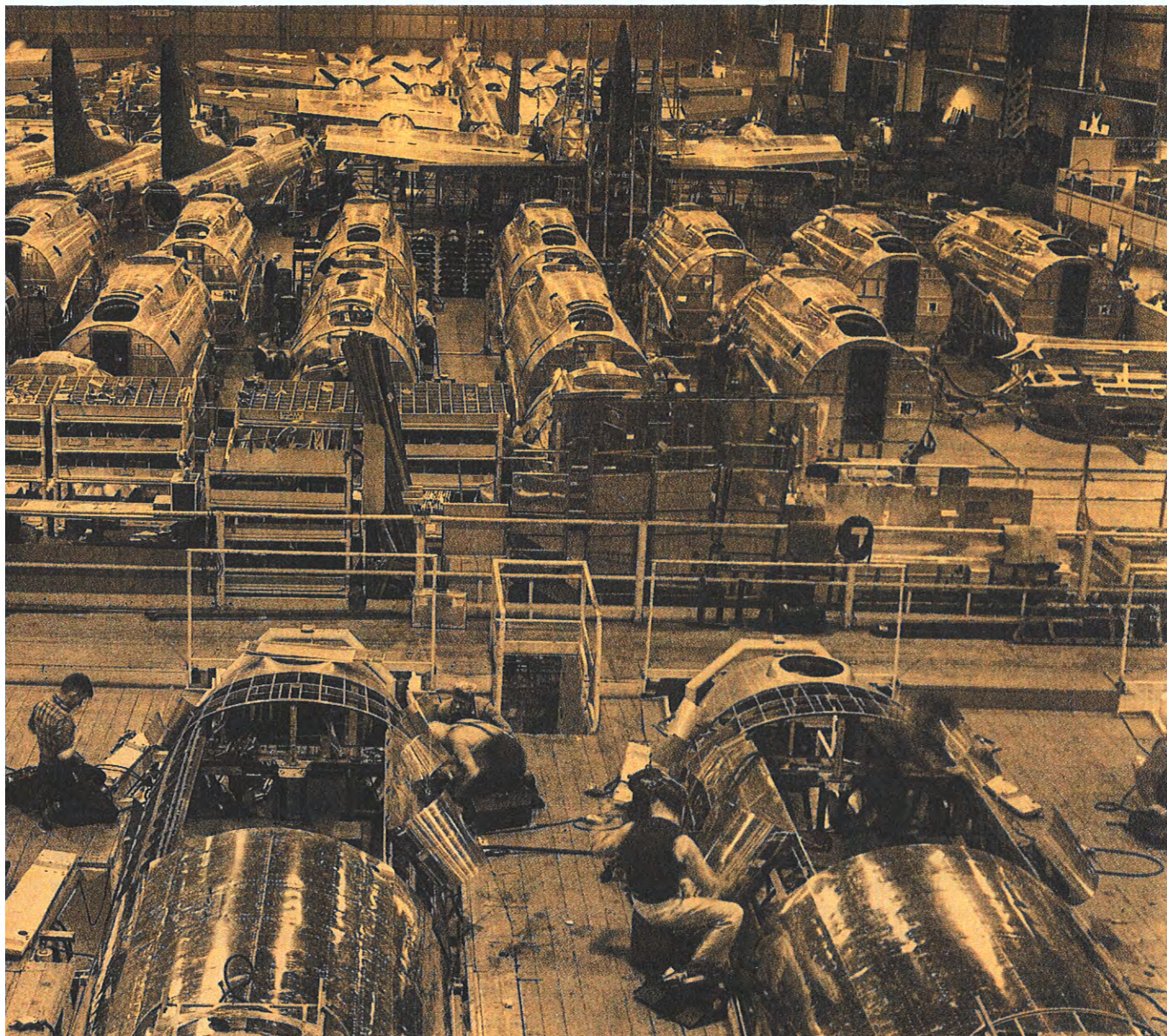


Photo courtesy of the Boeing Company Archives.

dependency results when no alternative source of supply for the item or technology is available in the United States.

Three Periods of Industrial Mobilization

There were three occasions during the past 48 years when the industrial base of the United States had to mobilize or surge to meet the needs of national defense—during World War II, the Korean War, and the Vietnam War.

The United States' involvement in World War II occurred long before the formal commitment of soldiers in 1941, with the United States selling or leasing weapons and other materiel to Great Britain and its allies. Even after the industrial base began its expansion, after the initiation of a national draft in 1940,

□ When the United States entered World War II in 1941, the industrial base quickly mobilized and Americans rallied to support the war effort by producing materiel such as these Boeing B-17 aircraft.

members of the base were hesitant to leave their lucrative commercial operations since they had no guarantee that the United States would enter the war. But their hesitancy soon faded. After the Pearl Harbor bombing, the United States found itself thrust into a major war. It was not until mid-1943, however, that the industrial base was producing at near peak capacity. Overall, the “arsenal of democracy” was able to produce over 296,000 aircraft, 1,201 Naval vessels, 86,333 tanks, and millions of rounds of ammunition.

After the war the United States began deescalating

a defense industrial base of untold proportions. Many industrial plants were either sold at extremely low prices or allowed to fall into disrepair. The United States passed several acts to help prevent some of the mobilization problems it had experienced at the outset of World War II. The Strategic and Critical Materials Stockpiling Act of 1946 was designed to ensure a stockpile of critical raw materials. The National Security Act of 1947 created the National Security Resources Board, which was designed to coordinate long-range military, industrial, and civilian mobilization efforts.

During the Korean War, which began in June 1950, the United States did not face the magnitude of industrial problems that had plagued its mobilization during World War II. Nevertheless, chronic ammunition shortages were a problem during the Korean War. Additional industrial acts were enacted after the war, but like those after the previous war, they were deficient in that they did not encourage mobilization planning; almost everyone believed that the next war would involve strategic nuclear weapons and would be over before any mobilization could occur.

It is difficult to equate the Vietnam War with other wars in which the United States was involved. Lacking a formal declaration of war, there was no authority to mobilize the base to support it. While the industrial base did surge to meet the requirements, this "surge-only" mode allowed mobilization plans to become dated and lose most of their design usefulness. The length of the conflict also gave industries time to slowly ramp up to their surge requirements, while allowing private industries to absorb some of the overflow requisitions. Funneling requisitions toward the private sector unfortunately had the effect of restraining modernization plans for military defense plants, which has haunted the United States ever since.

Today's Environment

In today's world of the Gramm-Rudman-Hollings Act, with scandals of acquisition fraud, perhaps the biggest problem facing the Department of Defense (DOD) is justifying and obtaining the military hardware it needs to meet current and future threats to the United States and her allies. Historically, during emergency situations, when the United States or her allies found themselves confronted with an external threat, the people of the United States stood firmly behind the Government's decision to counter the threat. This was true even at the outset of the Vietnam War. The Government's purse strings usually are loosened to acquire the items needed to meet the threat. During peacetime, however, DOD sometimes finds itself treated like the "bastard stepson" who gets

the scraps from the table. Such was the case immediately following World War II, the Korean War, and the Vietnam War.

But is the industrial base really in trouble? A few statistics will aid in our assessment. During the period from 1977 to 1986, the U.S.S.R. built 4,000 ballistic missiles, while the United States built only 1,050. The U.S.S.R. built 140,000 surface-to-air missiles, while the United States built only 16,200. The U.S.S.R. built 24,400 tanks; the United States, 7,100. The U.S.S.R. built 90 submarines to the United States' 43; and 28,200 artillery pieces to the United States' 2,750. Recent figures also show that of the 524 items that the Army has classified as "war-stoppers," the industrial base will be capable of meeting the production requirements of 275 in the first year, 34 in the second year, and 2 in the third year, leaving a delta of 213 war-stopper items that may not be available until after the end of a conventional war. While these figures would indicate that there is a severe problem, there are those who stand by the old philosophy that the next war will be escalated to a strategic nuclear conflict shortly after the outbreak of hostilities. "If this is true, why worry about mobilization?" they ask.

There are others, though, who believe that the next war will be a strictly conventional one, thus requiring a strong industrial base to provide us with the war materiel we will need to counter the Threat. While the facts, figures, and history would suggest we are in trouble, we are not as bad off as one might imagine. We have a strong base, one from which we can build a stronger one. The key question is whether to continue to let the base degenerate because we will have adequate warning time or to fix the breaks in the system now while we have the time.

Areas of Concern

One area about which we need to be concerned is what I call "logistics intelligence." What are the technological advances that we can expect not only from our future enemies but also from our allies and our own industry? Our failure to ensure that all available new technology is placed into a weapon system can result in a system being outdated before it is fielded. When this occurs, the result is usually a clamor from the press and the general public, questioning why the DOD wastes scarce dollars on useless systems.

Another area of concern that bears consideration is the United States' dependency on foreign technology. For years the United States had enjoyed a lead in technology. Over the last 10 years, however, much technological leadership has moved overseas and—for reasons of cost, availability, or quality—we have had to go abroad to acquire advanced technology for our

weapon systems. Unfortunately, we may have boxed ourselves into a situation in which some of the items can be purchased *only* from foreign sources.

For example, we purchase from overseas sources the semiconductors used in major weapon systems such as the M1 tank, F-16 and F-18 fighters, and the AHIP helicopter. Production and repair of these systems will come to a virtual standstill without semiconductors. To understand the magnitude of the foreign dependency problem, one only has to look at the Apache helicopter, which is dependent on six countries for major system components! Should our sources ever change sides or disagree with the political position of the United States, or should our supply lines ever be cut, we will be in serious trouble.

The Soviet defense industry operates at a partial mobilization level even during peacetime, giving the U.S.S.R. a 2 1/2- to 3-year advantage. To overcome this disadvantage, the United States must have the full cooperation of defense contractors. Consequently, the Government should take a more objective stance with defense contractors. Not all contractors are crooks, yet the punishment a contractor receives for an error (blacklisting, for example) is often devastating. Contractors should be treated in a more businesslike manner. The United States industrial base is plagued by a lack of Government support to defense-related industries, and the resulting love-hate relationship between defense and industry could jeopardize our position as a world leader.

While the Government should not be a welfare agency for defense contractors, perhaps the Government should subsidize critical defense-related industries that have little or no civilian application to keep them from wandering away from the defense system. This would help maintain a solid technology base in the United States. Japan has subsidized its defense industry for years, and has done so successfully. Subsidization could be done through teaming efforts or federally funded research. We could also encourage independent research and development by defense contractors. Another incentive the Government could offer is to pay all research and development costs for items with military-only applications.

Governmental financial interactions with contractors have also exacerbated the relationship between defense contractors and the Government. The Government currently has a program called "value engineering change proposal." In this program the contractor is encouraged to propose changes in the system; if those changes save the Government money, the contractor is paid a percentage of the savings. There have been instances where the Government has taken up to 18 months to pay the contractor his percentage of the savings. Such unresponsiveness

reduces industry's incentive.

The long lead time required to field a system is yet another facet of the industrial mobilization problem. From the concept exploration phase to full-scale production and deployment, 8 to 16 years can elapse. By the time the system has been fielded, it is technologically outdated, and the threat that it was designed to counter will have changed. Strict adherence to the life-cycle model, emphasizing the increased use of nondevelopmental items and strict conformance to integrated logistics support and total quality management, may help alleviate this problem.

There are several initiatives that, if fully implemented, will do much to solve the industrial-base-preparedness problem. One is industry-to-industry teaming on major weapon systems. This approach encourages major U.S. corporations to put their technology efforts together to come up with a viable, supportable weapon system. This also helps keep new technology at home. Cost sharing is another initiative that will increase foreign military sales programs and direct sales of U.S. military goods. This will keep the industrial base at a reasonable operating level and help us avoid a cold-base startup, which would take an average of 6 months to see the first item off the assembly line. One policy that has proven successful and needs to be continued is the stockpiling of strategic materials critical to defense industries. With many of the world reserves for our strategic raw materials existing in unstable Third World countries, we must stockpile them now to ensure they are available when we need them.

We must also ensure that technology is available in the United States even if the actual procurement goes to a foreign corporation. We must integrate industrial base preparedness into the acquisition phase of the life cycle. We must train and retain people with high-technology skills to prevent the "brain drain" that is occurring in industry.

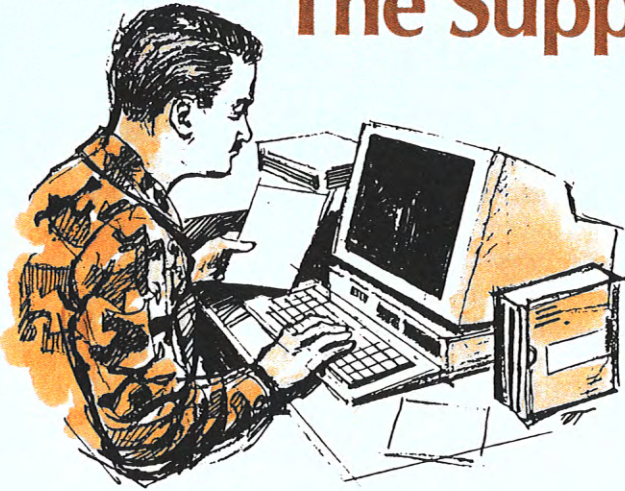
While the United States has lost some of its lead in technology and has fallen behind in production capability, it has not fallen from its "king-of-the-hill" position. Nonetheless, we must take a close look at our Nation's procedures and policies regarding the defense industrial base and make the changes necessary to stay on top.

ALOG

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ULLS-S4— The Supply Sergeant's Dream

by Sergeant First Class Edward B. Scott



A new module for ULLS will make life easier for battalion and company supply personnel while improving unit property accountability.

Computer systems have become commonplace throughout the Army force structure in recent years. Now, automation is coming to the assistance of the battalion logistics officer (S4) and the unit supply sergeant. The Army's computer experts have devised a system—actually a module for the unit-level logistics system (ULLS)—that will help supply personnel do their work faster and better.

The module, known as ULLS-S4, is being designed by the Army Logistics Center at Fort Lee, Virginia. ULLS-S4 will improve the operational performance of S4 and unit supply personnel by reducing the time they need to perform day-to-day operations. Use of ULLS-S4 should also help supply personnel maintain more accurate property records. Better supply performance and property accountability will in turn allow commanders to devote more attention to their units' primary missions.

The S4 module will usually operate at the S4, where it will be shared by the supply personnel of subordinate companies. It will also operate in the supply rooms of separate companies, batteries, and troops. The module may be placed in the company supply room of units that are geographically dispersed.

ULLS-S4 will be operated by the soldiers currently assigned to the S4 and the companies. No additional personnel, or personnel with additional military occupational specialties (MOS's), will be required. The primary operators will be the S4 sergeant, supply sergeant, supply clerk (holding MOS 76Y, unit supply specialist), supply warrant officers (warrant officer MOS 920A), and the officers assigned to the S4.

ULLS-S4 is being developed to operate on MS-

DOS software without requiring a specific type of hardware. This means that ULLS-S4 can operate on any personal computer with MS-DOS 3.1 software or a later version. The computer must have a 5 1/4-inch floppy disk drive and a 10-megabyte hard disk drive. The software is designed for use by table of organization and equipment (TOE) and table of distribution and allowances (TDA) units in both field and garrison environments.

ULLS-S4 is a user-friendly, menu-driven system that is easily installed and operated. The software provided to the user includes the operating system, the user's manual, and a training exercise for initial and sustainment training. The detailed user's manual allows the system to be self-extending (meaning the user can install the system).

The ULLS-S4 module's administrative controls allow a number of units to operate on a single computer. The module administrator, usually the S4 sergeant, controls access to the module by using a unit's unit identification code and an individually assigned password. When ULLS-S4 operates at the battalion level, there are two levels of operation—module administrator and user.

To extend this automation to users as quickly as possible, ULLS-S4 is being developed and fielded in a series of individual functional segments. The first function to be developed is property accountability, which provides the commander or hand-receipt holder with the ability to maintain accurate property records. This function automates the production and maintenance of sub-hand receipts, component hand receipts, and shortage annexes. No longer will prepar-

ing and maintaining the required property accountability records be a slow and laborious process. By using this automated system, supply sergeants can perform in minutes functions that used to require hours.

The property accountability function is designed for units that are supported by either the standard property book system-redesign (SPBS-R) or the standard property book system-redesign-installation/TDA (SPBS-R-I/TDA). However, it can also be used by units that still maintain manual property books.

The module administrator has access to three basic functions—maintaining passwords, backing up and restoring files, and maintaining the master component listings. The password maintenance function allows the administrator to add, change, delete, and view information pertaining to a specific user, such as unit identification code, unit description, user name, and password. The backup-and-restore function enables the administrator to make backup copies of data files on floppy diskettes and to restore previously backed-up files to the hard disk.

The master-component-listings function permits the module administrator to keep up-to-date listings for all sets, kits, and outfits, basic issue items, and end-item components that must be accounted for. Using the three diskettes provided, the administrator can load over 60 listings onto the computer. He can also create additional listings by keying in the necessary data or update listings by adding, changing, or deleting components. The administrator can also view or print individual master component listings or a compilation of all listings loaded onto the system.

The property accountability function of ULLS-S4 provides unit supply personnel at the user level with four main selections—download, edit files, reports, and backup and restore. The download selection enables the user to obtain hand-receipt data from either SPBS-R or SPBS-R-I/TDA. Data input from those systems are used to create the hand-receipt and the serial-number data files, which in turn form the basis for creating the sub-hand receipts. The download program also produces a hand-receipt data change listing and a serial-number data change listing. These listings identify those records that were added, changed, or deleted since the last download. The download program thus assists the user in completely and accurately accounting for all assigned property.

The edit files selection provides the user with access to seven data files—the commander's hand receipt; serial, registration, and lot numbers; sub-hand receipts; sub-hand-receipt holders; component hand receipts; shortage annexes; and unit information. Through this selection, the user can add, change, or delete, as well as view or print, a specific record from

any of the data files. The edit files selection is used to create and maintain sub-hand receipts, sub-sub-hand receipts, shortage annexes, component listings, and component sub-hand receipts.

The reports selection enables the user to print property accountability documents and two summary reports for the commander or hand-receipt holder. The commander and holder's summary-of-imbalances report permits the commander or hand-receipt holder to see at a glance any imbalances between the quantity of an item recorded on the hand receipt and the total quantity of that item issued on the sub-hand receipts. The commander and holder's complete summary report provides a listing of all property the commander is responsible for, including the quantity of each line item and the quantities issued to each sub-hand-receipt holder.

The backup-and-restore selection allows the user to move data files between the computer's hard disk and floppy disks. The backup process copies the unit's data from the hard disk to a floppy diskette. The restore process works in the opposite direction, copying previously backed-up files onto the module.

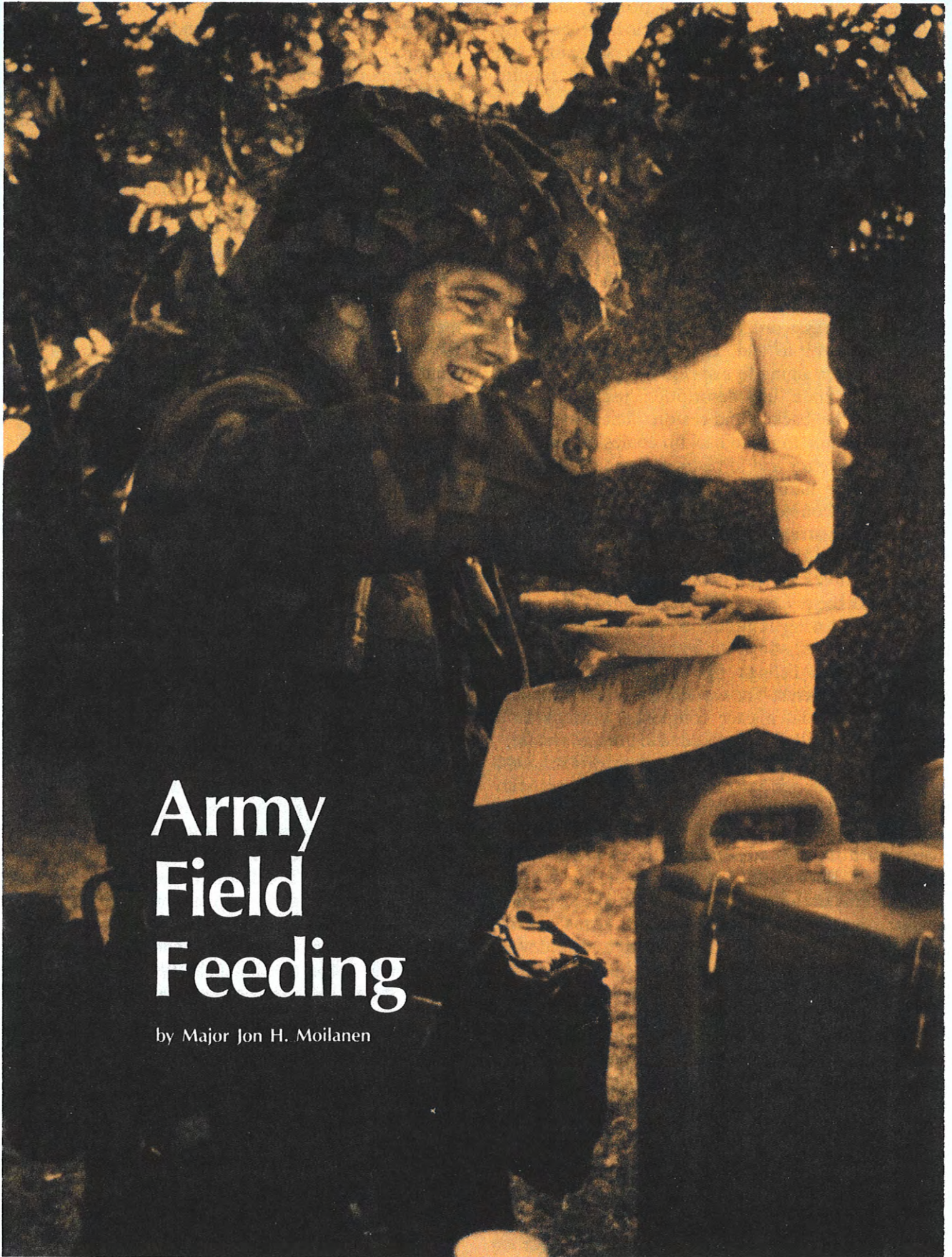
The property accountability function of ULLS-S4 eliminates the manual preparation of DA Form 2062's. This function will increase the accuracy of property accounting and protect the commander from serious reports of survey. The commander will then be able to spend more time on leading, training, caring, and maintaining. Supply personnel using this function will need less time to prepare and maintain sub-hand receipts, freeing them to perform other supply functions that may have been previously neglected and to train for their wartime missions.

Additional ULLS-S4 functions proposed for the future include ammunition accountability and forecasting, logistics reports, transportation asset management, and adjustment documents.

When ULLS-S4 is fully implemented, supply personnel and company commanders can anticipate needing less time to perform the day-to-day logistics administrative workload. They can also expect improved unit property accountability and visibility and greater supply management and discipline. The major goal of the ULLS-S4 module is to help supply personnel improve their performance and thus improve the Army's supply operations.

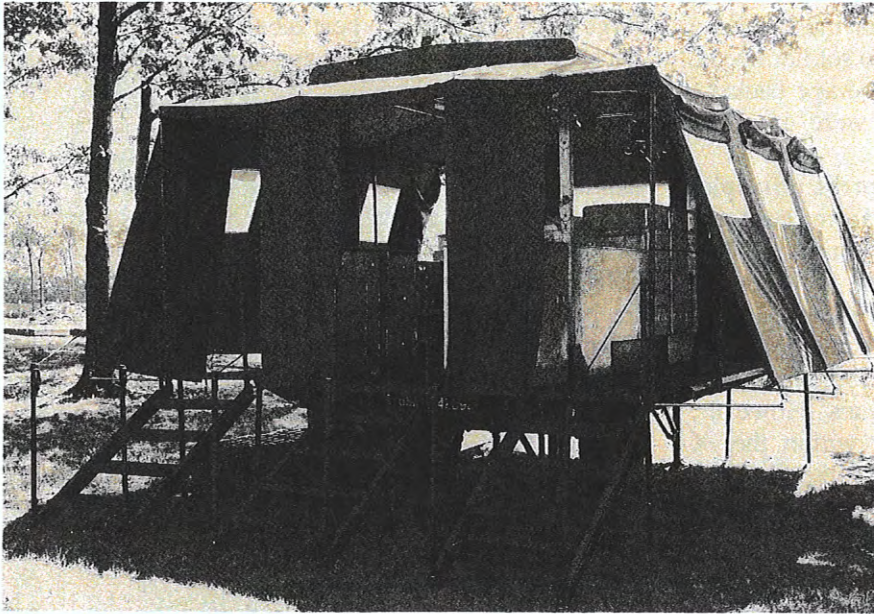
ALOG

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Army Field Feeding

by Major Jon H. Moilanen



□ A soldier at a remote training site adds a condiment to a T-ration meal (facing page). A mobile kitchen trailer is set up to prepare and serve meals in a field environment (left).

The 3d Armored Cavalry Regiment (ACR) conducted a successful Reforger '88. Success in sustaining the ACR's weapon systems on the mobile armored battlefield was directly linked with the care and feeding of our troopers. During Reforger, several events stressed our ability to provide quality field ration service to the regiment. We learned significant lessons in field feeding that should benefit those who are wrestling to solve problems with the Army field feeding system (AFFS).

Nutritious and appetizing meals are the required standard. Tray-pack or T rations and the meal, ready-to-eat (MRE), gained mixed acceptance as the normal meals for the Reforger ration cycle. Nevertheless, as we implement the Army of Excellence (AOE) initiatives of the AFFS, all leaders must make our food service doctrine successful.

Improving entree taste and appearance increases soldiers' acceptance of T rations and MRE's. Foremost, a T ration must look appetizing and taste good to the soldier. Staring at a breakfast of grits with cheese and bacon flakes in the predawn mist confirms that we have a long way to go before we meet this challenge. Breakfast entrees received most of our trooper criticism during Reforger. Entrees must look familiar. "Eggs are not eggs if they don't look like eggs!" was one familiar cry. The selection on the breakfast menu must be simple, such as eggs and ham or bacon.

Mixing dessert items such as cake with dessert filling, rather than just serving blueberry sauce in an open pack, can improve the menu. Some menu arrangements require a change in the Army's philosophy for menu planning, but many others can be solved at

maneuver-unit level.

Enhancements should be issued with the T ration. Hardy fresh fruits, such as apples or oranges, individual cereal packets, fresh or ultra-high-temperature milk, and fresh bread are needed supplements. Condiments of salt and pepper, jam, and spices should be available also. The support command (SUPCOM) must provide quality control for vendor deliveries within the class I "push system."

Troop issue subsistence activities (TISA's) are supposed to provide the full range of T-ration menu entrees to each major subordinate command. However, the 3d ACR perceived that only about one-third of the available entree selections were issued to the regiment during Reforger '88. During the first week of Reforger '88, fresh bread was not delivered to the regimental ration break point. Inventive minds conjured up the image of the actual master menu planner: He had to be the forklift operator who moved ration pallets at the TISA or SUPCOM field ration break point. Stranger things have happened.

To provide variety in meals, food items authorized as substitutes in the tray-pack meal module can be used. Also, B-ration semiperishable items can supplement the T-ration meats, fruits, vegetables, and staples. A-ration meals should be programmed as often as the tactical situation permits. Perishables can be mixed with T-ration entrees in the same meal service or, at a minimum, can break the monotony of a T ration-MRE-T ration daily cycle.

Recent improvements to the MRE should be better advertised. Soldiers must be told that new entrees have been added to the MRE menu, dehydrated entrees have been removed, and wet fruits are replacing

the current dehydrated fruits. Soldiers must believe that the food service system responds to soldier needs. Issues of hot sauce, fruit-flavored beverage packets, and commercial-brand-name candies were great for morale in Reforger '88.

Food service teams must be trained in the principles of the AFFS. A mobile training team from the Army Quartermaster School at Fort Lee, Virginia, qualified all 3d ACR squadron and separate unit food service sergeants on AFFS before Reforger '88.

The distribution of tray-packs must be managed for remote-site feeding. Some overage in food authorization is planned for when using T rations. However, the current 12- or 18-serving factor within the 36 serving modules must be controlled by the chain of command as well as food service sergeants. Food waste cannot be tolerated. Imagine the challenge for a first sergeant as he feeds an extended screen line for an armored cavalry troop. Besides time and distance factors, most of the scout and tanker outposts do not configure neatly with a 12- or 18-serving container.

Providing quality food service in a mobile field environment requires appropriate equipment for AFFS food preparation and service. Equipment must be available to heat the MRE when the tactical situation permits. Ideas range from immersion heaters in a



□ Bread is prepared at a field bakery for distribution to remote sites.

large barrel of water to heat tabs for individual entree packets in a heated canteen cup of water. A new stand that encloses the canteen cup will be available soon. The stand serves as a stove when inverted. Also, armored vehicle crews will soon have an electric heating device to heat several MRE's at once.

Additional required equipment includes the authorized kitchen components to the mobile kitchen trailer (MKT). These components must either be issued with the pre-positioned equipment in Europe or be deployed from the United States with the reinforcing unit.

Kitchen components—such as AFFS meal carriers, tray-pack extractors, and tray-pack openers—improve food preparation and service. The 3d ACR received pre-positioned materiel configured to unit sets (POM-CUS) MKT's without these components. However, the use of mermite containers and adapted can openers assisted in providing satisfactory mess capability. U.S. Forces Command attempted to issue the AFFS kitchen components to the regiment just before Reforger deployment. Unfortunately, the ships had already been loaded at the port, and weight allowances had already been mandated in the strategic airlift.

An effective field device is needed to compact the large volume of plastic and paper tableware and other garbage that results from the AFFS modules. A trash compactor would improve space efficiency in refuse removal and sanitation maintenance. In Reforger '88 limited transportation at troop, squadron, and regimental levels was constantly taxed to provide effective trash removal service.

During Reforger '88, the tactical requirements sometimes dictated the issue of two MRE's and one T ration per day. However, the 3d ACR achieved the AFFS standard of serving two hot meals and one MRE per day. Troopers were served nutritionally adequate meals.

Officers and noncommissioned officers must promote the acceptance of AFFS T rations and MRE's as a fact of life and encourage innovative measures to make field rations more palatable. If we expect the AOE initiatives in the AFFS to be successful, the Army leadership must provide an appetizing operational field T ration and MRE. We must have a ready-to-heat-and-serve ration that looks good and tastes good!

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General Tuttle Talks with *Army Logistician*

General William G. T. “Bill” Tuttle, Jr., shortly after his nomination to assume command of the Army Materiel Command (AMC), granted *Army Logistician* an interview in which he agreed to share his views on a wide range of logistics issues the Army currently faces. General Tuttle is eminently qualified – militarily and academically – as the Army’s principal logistician through 31 years of commissioned service, spanning an array of responsible command and staff positions. After graduation from the United States Military Academy in 1958, he was commissioned a second lieutenant of Infantry and received a bachelor of science degree in engineering. General Tuttle holds a master of business administration degree from Harvard University and is a graduate of the Infantry Officer Basic Course, the Transportation Officer Basic and Advanced Courses, the Armed Forces Staff College, and the Army War College. He began his commissioned service as a platoon leader, 1st Airborne Battle Group, 503d Infantry, 82d Airborne Division. In 1960, he rebranched to the Transportation Corps and continued to progress through challenging command and staff assignments, culminating in his current assignment as commander of AMC.

The following is the dialogue as General Tuttle talks with *Army Logistician*.

Logistician: On behalf of our readers, thank you for taking time from an extremely busy schedule to talk with us about Army logistics. As you assume command of AMC, and if my memory is accurate, you will be the first to move directly from a position like Deputy Commanding General for Logistics, Army Training and Doctrine Command [TRADOC] and commander of the Army Logistics Center [Log Center], representing army-in-the-field logistics and combat service support, to commanding the Army's wholesale logistics organization. Sir, would you tell us what similarities and what differences you anticipate in your role as commander of AMC versus your role as commander of the Log Center?

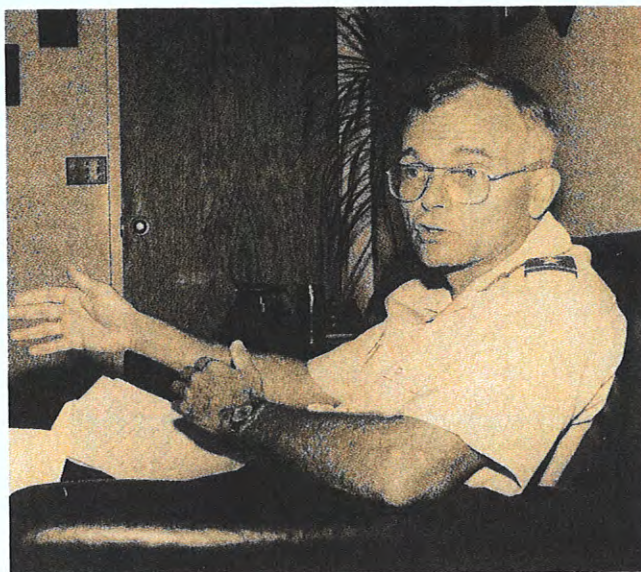
Tuttle: Well, for similarities, I think both organizations are concerned with sustainment of the AirLand Battlefield. That's the ultimate mission of both organizations. In TRADOC, we have two responsibilities and the first is, of course, to prepare the Army for war, which is the purpose of the training mission and the doctrine mission. Then the second part is to be the architect for the future Army. That part involves development of our equipment requirements, force design, and leader development.

In the Log Center, our focus has been on preparing the Army for war and developing our soldiers and leaders to be good logistics soldiers—that's the Log Center's job. Also we integrate the efforts of the tech service schools, and we monitor the logistics training that goes on in the arms schools. These are really the primary tasks in preparing for war.

We try to train our new soldiers as apprentices, then look to the on-the-job training programs in the units to add skills. We then try to bring the soldiers back into the basic noncommissioned officer [NCO] course; then on to the advanced NCO course; and finally to the Sergeants Major Academy. That's the leadership development training on the NCO side. We also do the officers' courses similarly. That's really the product, if you will, of the Log Center's effort that the field sees. It is much like AMC's work in providing the equipment and supplies that go into the equation for commanders to use in combining the products to sustain the AirLand Battle.

In terms of AMC, I see its role in preparing for war as primarily that of sustainment. In other words, buying the repair parts, executing the depot maintenance repair programs, and taking care of the systems and equipment that we have already bought. We have a tremendous investment in equipment that is in the field today. My view of AMC is consistent with the Defense Management Review in terms of what roles the service logistics commands ought to have.

And, secondly, in the preparation for war, it is to



“We field packages of capabilities—not just tanks, for example. A unit is a capability ‘set’ and that includes the complementary system. . . .”

make sure that we do the best we can in terms of industrial preparedness and readiness of the industrial base to convert if we have to go on a wartime footing.

The other way I have of looking at it is as the architect of the future. There are great similarities in AMC and TRADOC, and we work very closely in terms of the systems that we need in the field. There is a great deal of crossruffing of technical opportunities in the laboratories, which the research and development [R&D] centers capture; and then, in TRADOC, we make the modifications to concepts based on technological opportunities. In this concept-based requirements system, we look at the Threat and look at the basic requirements of the environment in which we're going to fight; and from these considerations come the concepts. That's the process you're seeing in the heavy force modernization and the LHX [light helicopter experimental] development and the different ways of fighting—and supporting—that are evolving. Technological opportunities are being captured, but there is also a need to react to the Threat and know how to fight outnumbered. From all these factors we can then work the operational and organizational plans for equipment requirements and, at the same time, focus on fielding units.

We field packages of capabilities—not just tanks, for example. A unit is a capability “set” and that includes the complementary systems that go with the principal system—for example, the training, the munitions, and all that have to go with the systems we field. So all these elements are put together in the force design business. Concepts and force design work together, because when you decide on a new

tank or new air defense system, you find that you really need to change the way you do business—the way you plan to fight. What you did with the old technology and the old systems needs a lot of work—not only against the Threat, but the old may not maximize capabilities that the new technology presents. In that sense, there has to be a close relationship between the development centers and TRADOC in the initial stages, even before we get to the project manager [PM] structure and even before we decide that we need a PM appointment. In this business, once we make the commitment and milestone 1—or even milestone 0—is past, and we decide a system requires project management, then AMC shifts to a different role—a major difference under Goldwater-Nichols—and becomes a supporting player. The primary actors become the PM's and their program management offices and the TRADOC schools.

In this sense, both AMC and TRADOC are concerned with preparing the Army for the future. So there is a good deal of similarity in our business. We are both engaged in leader development—in TRADOC, mainly for the soldier-leader but increasingly for civilian leaders. AMC has long had a civilian leader development responsibility, and I think that it's beginning to blossom into a more focused look throughout the Army, not just in AMC. Perhaps AMC has been a leader in that function. Those, then, are the similarities.

The differences in going from a TRADOC command to AMC? Well, I guess I feel like I'm going back to the days of when I commanded the 503d Supply and Transport Battalion—it's interesting that two out of the last three AMC commanders came from that battalion and all three commanded in the 3d Armored [Spearhead] Division. The responsibility of the battalion was to support those systems in the field, and I think that has to be the major task in AMC. The Log Center job is more design and development of sustainment systems like log automation. That, of course, is a major design *and* fielding job, which goes further than just the combat developer's job, because we're building the functional part of software—not actually writing it—but writing the detailed functional descriptions to be translated to software.

So, if I have one major difference in responsibility in AMC, it's going to be having the day-to-day operational responsibility for sustainment of the Army. I haven't experienced that in many respects since I left Eastern Area, Military Traffic Management Command [Bayonne, New Jersey], about 8 years ago. Certainly, the OTEA [Operational Test and Evaluation Agency] was an operational job and had output that was clearly measurable, but it was a different kind of responsibility. So I think recognizing these differences but still keeping our eyes focused on preparing

the Army for war and being architect for the future is not a bad way to look at the challenges in AMC.

Logistician: An interesting follow-on to that point, sir, is that at least one of your predecessors referred to AMC as the "Army's logistician," and I found an Army War College reference text describing AMC as "the Army's principal logistics command." Do you agree with those descriptions? and Would you elaborate on what those descriptions mean to you?

Tuttle: Well, I wouldn't want to characterize AMC as the "Army's logistician" because that implies it has major responsibility for *all* logistics, and that's not accurate. The Army Logistics System, which supports soldiers and systems, really begins with the supply sergeant, the maintenance platoon in the unit, and goes all the way back through AMC. It is a *system*, and I think one of the things we've been trying to do—among AMC, TRADOC, and the Army Deputy Chief of Staff for Logistics—is to try and build a *seamless logistics system*, the parts of which are invisible to the soldier. All he sees is that he needs a part, he puts a request in on a little computer, and the part gets to him. He really doesn't care where it comes from. There have to be different responsibilities in there, obviously. There have to be piles of parts at various places simply because you need them immediately; and you can't wait for the transportation system, although we want to speed that up as much as possible. Because there are theater responsibilities and CONUS [continental United States] organizational responsibilities, there'll be differing roles to be played throughout the logistics system. AMC, obviously, plays a major role.

I think it's fair to characterize AMC as the principal logistics organization of the Army. If it weren't, you certainly wouldn't have a four-star commander and 113,000 people. As the principal logistics organization, I think our focus needs to be on developing the systems that we've started, like the objective supply system and the ammunition system, which is very close to being "seamless." With a few changes over the next couple of years, I think we essentially will have AMC visibility of logistics assets and have the ability to anticipate—which is one of the imperatives of logistics sustainment of the AirLand Battlefield and one of the responsibilities I think we at AMC need to take on. We have to fully understand how to anticipate requirements—what the needs are—so we can do the "pushing" in an intelligent way, because there simply won't be time to react to the demands should we go to war. So I think there'll be an AMC responsibility to support our weapon systems; and I'd like to particularly focus on support of weapon systems.

We've been trying to get there for a number of years, and we're making progress; but it's a very difficult problem. We have to have that visibility of the needs. Take the Apache, for example. We have to understand the operational status of the Apaches in the corps and divisions and be able to anticipate requirements, to look at the availability rates, the fully-mission-capable rates, and know what components are causing problems, all in near-real time. Then we have to be able to react by facilitating the supplying of serviceable components, perhaps between commands. You know, say you need a widget in Europe and there's one at Fort Hood. Would you two guys get together? Providing that service, having that visibility, will lead us into a seamless system. Certainly the same can be true with ammunition. Everybody ought to have visibility over what's available in his area of responsibility, and we all should be singing from the same sheet of music. We all ought to be able to click on our little computers and call up, for instance, the Copperhead status—from the AMC commodity manager down to the corps and theater materiel management centers. Having that knowledge will create a *seamless logistics system*. So I think that's the direction I hope we would go.

Logistician: Since the demise of the tech services, there have been diverse opinions on what constitutes wholesale logistics (as we often refer to AMC as the wholesale logistician) and retail logistics. Sir, how would you define the roles of each and where would you think the demarcation line falls between wholesale and retail, or do you feel that logistics should be a single continuum from "factory-to-foxhole"?

Tuttle: I think this builds on my previous answer that if you perceive logistics as a more and more seamless system—at least from the customer's point of view in the supported unit—you begin to view it as a continuum. In our logistics exercises every year, we have a big briefing that we try to give, and we run about 3,000 people through it during the exercise. We talk about logistics—in fact, all combat service support—as a continuum. As I said before about organizations that are responsible for pieces of the system, they need to be viewed as a continuum. We need to teach logistics that way, we need to work it that way, and not to talk in terms of wholesale and retail—even though they could be convenient for pedagogical purposes—as if these are barriers that exist like some sort of Chinese wall.

If you talk about wholesale and retail logistics separately they can become such, and they really have been in many respects. There's lack of understanding

within AMC of how the field operates. We're correcting some of this. General Salomon [Lieutenant General Leon E. Salomon, commander of the Army Logistics Center] noted a recent example—again the benefit of having a field soldier come into AMC—that the LAR's [logistics assistance representatives] didn't understand the supply systems we're fielding—the SARSS [standard Army retail supply system] and the ULLS [unit-level logistics system]. So we're now teaching these systems in their courses at ALMC [Army Logistics Management College]. We get one of our systems guys from the Log Center to go over there and demonstrate the systems, so the LAR's begin to get familiar with them. If you're going to advise units on equipment readiness and on parts supply as a major part of readiness and you don't understand how the Army supply system works, then you're working with one hand tied behind your back.

Conversely, on the field side, there's a lack of understanding of how the AMC processes work. That's getting better, but it has been there ever since I've been in the field, and that's where I've spent most of my service in the Army. So those misconceptions need to come down. That's why, working with the Logistics Executive Development Course and working with the multifunctional logistics training out at [Fort] Leavenworth, we're trying to more and more push the seamlessness of the logistics system, so that our officers—at least from major on up—will understand the *whole* system.

Likewise, our civilian managers need to understand what the field does and so our "greening" processes need to go on for our civilians. I certainly intend to continue the efforts that have gone on in those areas.

Those barriers really need to come down. We create things—for example, the bifurcated stock fund. That's got to be the world's worst creation, where the Army buys parts about three times. Once from the supplier, then about twice from itself. It's a monument to futile bureaucracy. It simply has to come down. We've got to find a better way, and I know we can. We've been working with the Finance Center, and there are ways to manage this as we implement some of the new supply systems and focus on what's important—getting supplies to the soldier. We may have to look at ownership of stocks a bit differently. The objective supply system is getting us into that area.

It's a *very* expensive luxury to think of stock ownership in terms of wholesale and retail, because people get their own turf, and they want to buy, and they want to own. Even for the limited period of time in which they are in charge of stocks, they want to feel it's all theirs. That's what's given rise to some problems.

I've talked to people about ASL's [authorized stock-

age lists]. You know, we've got five or six thousand lines of parts, probably a couple million dollars or more invested in a division's ASL. Why should a division tie up its P2 money in that business? Why don't we look at a system that would have the Army stock fund own that stock until it's issued—to be put on a vehicle or to go with a unit as PLL [prescribed load list]?

Conversely, why do I need 30 days' stockage if I can begin getting materiel routinely in 8 to 10 days? You know, 30 days would have been needed in World War II, but maybe conditions have changed. Now, we must look at that standard somewhat differently. That kind of stockage ties up an awful lot of our very scarce capital. I think rather than train, we're buying parts constantly and stocking them; and, sometimes, we're excessing them for one reason or another. So these things have to be looked at, and they're creations of this wholesale-retail dichotomy.

We need to look at issues like, Why one PLL per company (150 or so per division)? if we can get materiel responsiveness; and we no longer maintain by company but by task force. These are emotional issues, you see; so one approaches them by trying to get consensus and by demonstrating that there's a better way. We just need to press on with the effort to break down the barriers.

I think in ammunition management we've made some good breakthroughs and the new architecture that's been devised by the PM for ammunition logistics, who has been working very hard and very closely with TRADOC on that, will result in a much more streamlined system that'll give us better visibility over what we have and the capability to better use our assets.

Logistician: Sir, you've touched on several of these points, but I'd like to follow-up in context with a recent interview the Army newsfeed held with Secretary of the Army Michael Stone, in which he said his number-one priority as Secretary is to ensure Army readiness and to balance what he called "three pillars" of the Army. He called those three pillars the force structure, readiness, and sustainability. In your view, what Log Center programs contribute most to the support of the force structure, readiness, and sustainability?

Tuttle: Well, to go down those issues, I talked before in terms that we in TRADOC call the domains of our environment—doctrine, force design, equipment requirements, training, leader development, and mission support.

Of course, force design is the basis of force structure. The structure determines how many units, and design determines what the units look like in terms of its own tables of organization and equipment.

We've been working in both of those areas in Log Center and working very hard in conjunction with the Total Army Analysis. Obviously, the American people buy an Army to fight, and the reason we have logistics forces is to have enough capability to sustain the fighters. What you want to do is have more fighters and fewer supporters if that's possible. That's been the object, and having had a couple of tours in the force development and force structure business, I've had to deal with that over the years.

I came to the Log Center job with the idea that we needed to justify every support organization and support soldier that we have as being the minimum necessary to sustain, with some confidence, the combat forces we send into battle. So with that in mind we've worked the issues of both design and organizations. We went through testing the light infantry division design soon after I arrived. We developed the support squadron for the cavalry regiment, much like the forward support and main support battalions in the division. We've now developed the aviation support battalion concept, and we're getting ready to test it. It has a different command and control mechanism that promises, I think, to make better use of our existing companies, which in the logistics business are the organizations that do the work. We also designed COSCOM's [corps support commands] based on the work load analyses that we use for structuring the Army as a whole. We've given the designs to the corps and major commanders and said, "Build your COSCOM on this model, looking ahead 4 or 5 years," given the redesign of units based on the log productivity studies and on host nation support assets now increasingly available to us through the German Territorial Forces.

We've kept to this sort of idea in building the minimum sustainment forces into the Army force structure itself, and that's been a major focus for the Log Center. We're trying mainly to make people understand what a COSCOM is, because it looks like it's about a hundred different companies of different missions. We've tried to explain the rationale for COSCOM and TAACOM [theater army area command] designs based on force structuring rules, and I think we've made some progress. It's a meaningful exercise because we've been roundly criticized by the GAO [General Accounting Office], for example, for units that aren't prepared for deployment; they don't know where they're going to be deployed nor what they will do. The Capstone organizations have had growing pains. Now, I think we are finally getting ahead of those problems. Force structure, obviously, is of supreme importance.

In terms of readiness, I think two pieces of our work over the last 3 1/2 years I've been in the Log Center

have been the contribution to the training mission and in automation.

We've come a long way in really making major strides in improving our noncommissioned officer training. Our advanced individual training had been restructured by about 1985; and we're really making good use of resources there. And since 1986, our leader development training has become far better focused and is paying off in terms of better trained leaders going back to their units better able to concentrate on their jobs and lead their soldiers much more effectively.

In automation, we have fielded some five to six thousand microcomputers—the TACCS [tactical Army combat service support computer system] and the ULLS. I think we have 26 different systems in the field or in the process of being fielded right now. So I think that's had a major impact on being able to control our assets—everything from property book to repair parts to ammunition. Finally, we're getting the Army out of the stubby-pencil environment. Those are two major areas where I think we've had a real impact on readiness.

I also think in our unit training the LOGEXes [logistics exercises] have materially helped our reserve units particularly to improve their readiness rates.

In the sustainability area the Log Center has worked to do a better job of integrating doctrine, organizations, and systems in terms of command and control, which is where the synergy lies. The opportunities for improvement there are in more productivity through more focus and awareness in the use of the systems. We tend to task-organize our forces in the field; but unless we do it intelligently, we squander resources and sometimes don't get the job done. That's been our focus as we build toward the AirLand Battle-Future logistics concepts that we're now working on or about to convert to. Building tight organizations, using equipment like the palletized load system, will certainly make a material step forward in building units to sustain and survive, for we have to survive in order to sustain. So I think these are the major focuses.

I neglected to mention a process that we started now about 2 1/2 years ago, with the Vice Chief's approval, and that's doing post-fielding systems reviews, taking systems like the Bradley, M1, and, most recently, Apache and going to the users and saying, "All right, here's what we set out to do in terms of reliability and maintainability of the systems. How're we doing?" So far, General Hissong [Lieutenant General Fred Hissong, Jr., Deputy Commanding General for Materiel Readiness, Headquarters, AMC] and I have chaired three of these, on the three major systems, and I think the reviews are getting increasingly useful.

Each review seems to have been an improvement over its predecessor. I think we started looking at Apache about a year ago. Once the spotlight was turned on, everybody was going to play "show and tell"; and oddly enough, things began happening.

People began to go to root causes of problems: "Why wasn't reliability as much as we thought it was going to be?" And, of course, the field sort of generates this focus; but it's our job to take what the field gives us—both TRADOC and AMC—and put substance into it. I think that's largely what we've done on these post-fielding reviews. They're monumental exercises in terms of work load and staff, but they're an opportunity to see what we're doing, how we're doing it, and why we're doing it and to make the fixes. There's a whole list of "fixes" on each of the systems that we're still working on. So I think that, with the help of these reviews, we'll see continuing improvement in our readiness.

Logistician: As a follow-up, how do you think AMC can best contribute to balancing force structure, readiness, and sustainability?

Tuttle: Well, I think the primary way is building on what I've talked about. As I've said we've got billions of dollars—I don't know the exact figure, but it must be in round numbers \$70- to \$100-billion worth of equipment. Maybe more than that. In terms of force structure, we have about 130,000 mechanics in the Army force structure. Roughly 10 percent of the Army is mechanics. So the question is, How much of that force, through better design, more reliable equipment, more maintainable equipment, could we convert to fighters or not need at all?

If the Army is to go down in numbers, why do we need to give up brigades? Why don't we look to equipment improvements—spend some money on that—and then attrit some mechanics because we no longer need them because equipment has gotten more reliable and more maintainable? I think in terms of force structure, AMC's impact can largely be in improving present systems—going back, as we're doing, and peeling back the layers to see what's causing us to have fairly low reliability in many of our systems.

We need to find ways to get better designed components into the field, to make the product improvements on systems—especially those we'll have another few years like aircraft, the Bradley, the tank—that will result in a higher reliability and more maintainability. The Air Force has been going through this program for several years, and I think we in the Army really need to get on with it. That would help us reduce the requirement for mechanics, because there is a very clear linkage to maintain-

ability—through better maintenance aids and through better manuals. We found that in Apache. For example, we have three different manuals from three of our commodity commands that describe the same item. It's those kinds of things that have to go.

Since we no longer have responsibility in AMC for the management of the major systems—the 80 percent of the procurement budget—AMC then must play the lobbying role. We're the quality control. We have the test and evaluation responsibilities; and certainly I think our role is critical in integrated logistics support, being the main system supporter, once the system is fielded. We have some weight to bring to that. I think that would be a major effort I would like to push in again emphasizing our role as a supporter of the fielded system, in making the product improvements, in making more reliable, more maintainable systems; and, therefore, improving our ability to reduce force structure in that particular area.

I think the same thing goes in terms of readiness. We're spending an awful lot of money on maintenance, on parts, and, again, on force structure. That's a fairly hefty part of our operations support cost. So if we could make some dents in those expenditures, that's more dollars available for training in a relatively fixed budget. We probably need in AMC—and we'll work into that—to become more efficient ourselves and that, in effect, will result in more training dollars. Less P7 would be necessary, and that would improve the readiness of the Army. That would make those funds available for use in training as well as improve stockage of repair parts where they are needed.

I think my major focus for the next couple of years is really the push to reduce operations and support costs. I think it would also help the major commands achieve efficiencies, working that idea in conjunction with the objective supply system, for example. That means lower inventories if we can get the parts to them faster. You don't have to tie up training money in the pipeline. You don't have to tie it up in quite so large ASL's. The work we're doing at Fort Rucker will let the airfields requisition directly from AVSCOM [Aviation Systems Command]—Rucker is kind of the model for that process. The airfield is like a unit with a PLL. We can place critical stocks at Rucker—jointly AVSCOM and Rucker could agree on what items—and AMC could continue to own that stock, which would also be available for filling high-priority needs at other places if there were nothing else available. If it works at Rucker, we would hope to extend the idea to CONUS ASL and then to Europe.

Looking at component repair, there are probably more efficient ways to do it than the way we and the MACOM's are doing it. We don't have visibility over



“I think one of the things we've been trying to do . . . is to try and build a seamless logistics system.”

most of the components, even some very expensive components. We're going to look at using a special repair activity, building on the one that's at Fort Rucker now, maybe to service a larger area than just Fort Rucker—why not Benning and Campbell—and why not fly your components in—or “fed-x” them in—get them repaired, and you don't have to buy resources that may not be fully employed. So we can make better use of the resources we have.

I think in the sustainability area, these all work toward improving our ability to sustain ourselves. I think our focus on quality is paying off. General Wagner [General Louis C. Wagner, Jr., former AMC commander] pushed that, and I've seen tremendous results in AMC from that. We see it in the T800 engine we're now buying. From all the testing results that have come out, it's a superb engine; the work on the SINCGARS [single-channel ground and airborne radio systems] radio and the other new systems are benefitting from the quality push. Industry is certainly getting the word, and we in the AMC system are, too. So the emphasis on quality will, I think, improve our ability to sustain as well as lower our operations and support costs over time.

Logistician: Sir, your change of command came at a time when not only the Army but also the Department of Defense is undergoing significant change. You mentioned early on, in responding to other questions, the establishment of the acquisition executive, the program executive officer, and the program

management structure. The recently adopted recommendations of the Defense Management Review call for further *streamlining* of each service's acquisition organization, and they mandate that each service's materiel command function in three primary roles: "providing necessary logistics support, manage smaller acquisition programs, and provide support services to PEO's and PM's." These somehow seem to reduce certain of AMC's roles in acquiring major systems as you've mentioned. In view of these changes, What role do you see AMC playing in coming years? and How do you see these changes affecting AMC's ability to function as the Army's principal logistics command?

Tuttle: Well, first, let me make a small correction to a characterization that you made. You mentioned manage "smaller acquisition programs." The real term is manage those programs that aren't managed by PEO's—the non-major systems is essentially what we're talking about—or those that are not designated systems, because some that you may call small systems, because of their impact, may be designated for PM management. But I think in the GAO study of how well the Goldwater-Nichols Act was being implemented, the Army came out as a model of how to do it. One could almost suggest that the focus on this piece of the Defense Management Review is more to get the other two services to move more in that line. For 2 years now the Army has essentially done what the Goldwater-Nichols Act required and certainly



"... Keeping our eyes focused on preparing the Army for war and being architect for the future is not a bad way to look at the challenges in AMC."

what the Defense Management Review has suggested in the three particular roles you've talked about.

We've implemented that law, and I think it has basically worked very well. There are obviously some changes, because people have to change their ways of doing business. I don't have much of a feel for that yet within AMC, but people are adapting to what I might call a matrix management role. It isn't clean. Organizations have been using it for many years now; and it's sort of like what Winston Churchill said about democracy—"It's not the perfect system but it's better than all the others." I think this is what we've come to, and it takes adjustment; but it's a flexible organization, and it reflects the fact that a PM will have different needs for different people as a program progresses through its life cycle management. So, AMC then can supply that.

There's an interesting byproduct of the PM organization. We've been working that for the past 2 years at the Log Center, because we have it in the STAMIS [standard Army management information systems]. The issue came up 2 years ago, about how we felt about moving into that PM area. I was, at the time, very upset with my headquarters, because money that had been budgeted for development of the STAMIS was coming from DA to TRADOC, and I wasn't seeing but about a third of it. It was being used for other purposes because, in major commands, that's their prerogative; and DA, I'm sure, was well aware of it. In fact, Mr. Ambrose [Honorable James R. Ambrose, then Under Secretary of the Army], got wind of it, as I recall, and quite vociferously objected to that process.

I saw the PM role as saying, "Look, if we make a commitment at the department to develop the systems, and we make that allocation up front, then that's what we ought to do." Because that's what the Chief of Staff of the Army and the Secretary of the Army decide; it's up to us in the subordinate organizations to execute with some discipline. So my view was that the PM system could only help us. There's going to be some pain from time to time; people see their roles differently, but by and large the result has been good.

The result for us was \$10 million more a year going into development of STAMIS since 1988 than had heretofore been going into it, although the money is the same level of funding in DA and we haven't changed it. So we now have 100 authorizations in the Log Center in the Logistics Automation Directorate that do functional description work and work hand in glove with the Information Systems Command software developer, who is collocated there and is in the process of developing these systems. TRADOC doesn't pay for it. The work years and the dollars come from DA through the PM. We've worked that

out fairly well so we're trying to do the same thing with the combat service support control system, because we have the same responsibility there, much like any other software system. So basically I agree with the change. I think our results over the past 2 years have been good. I think the Army results have shown it works, and it does clear the line of chain of command. I know from working on the truck program over the last couple of years. When General Ball [Brigadier General James W. Ball, now CG, Army Ordnance Center and School] was the PEO, trying to manage two programs at the same time—the family of medium tactical vehicles and the palletized load system—his “tape” was very short. He could get issues up to the Under Secretary or deal with the Congress or deal with Office of the Secretary of Defense; and we could support him. He didn't have to go through all these briefings at the Tank-Automotive Command and then at AMC. From my experience when I was at OTEA, the PM's had to go through all those prebriefs, and it was just 15 more people looking at your program who didn't have responsibility for it; they were just hidden there. Basically, I'm very much in agreement with the PEO idea. I think it allows AMC to focus on its primary role of being the principal logistics command for the Army and to support that vast investment in stuff we have in the field.

That's *real* readiness; that's real go-to-war—what we've got there now. We've an obligation to make that stuff work, to keep it supported, and to help the units with their turnover of people, particularly in places like Korea where it's extraordinarily difficult—I can tell you that from personal experience. Our logistics assistance offices and logistics assistance representatives do a marvelous job out there in the field, and we must support them. I think that allows the AMC commander now to focus on sustainment, and General Wagner's done a marvelous job. That's been General Salomon's major task this last year, with guidance from General Wagner—to implement better customer support. You can see the differences now. We have the visibility; the field senses it and knows they are being supported.

I think the PEO organization allows us to do that. I don't think it denigrates our ability to work with the PEO's. If something's going wrong, we can certainly intervene. We have the quality assurance role—that's part of the matrix support; we have the R&D centers to help the PM's out; and I think what it will allow is a focus of responsibility. But if things do go awry, it allows a four-star commander, along with the TRADOC commander, to get into the thing with the PEO-acquisition executive system and get them straightened out so we don't lose systems.

I, unfortunately, was at OTEA when we lost a \$3-

billion investment in major systems. First was the DIVAD [division air defense gun system], and I tested that. That was \$1.8 billion that went down the tubes, and then the Aquila [remotely piloted vehicle]. We were just going into testing it when I left, and it went similarly badly. I think a lot of that was management. The Army didn't manage them as well as it should have. So I remember those lessons, and I think the split of responsibility is probably conducive to being better able to focus on those things.

Logistician: Sir, do you envision significant changes in AMC's organizational structure to accommodate support of the PEO acquisition structure?

Tuttle: I don't think to accommodate to that; we've made those major changes now. We'll continue to evolve and refine. I think the real benefit of the Defense Management Review will come in exposing laws, regulations, and practices that don't contribute to the end products—those that take a lot of bureaucracy to implement. I think, for example, while the Competition in Contracting Act is, in many ways, a good idea, it has exacted an enormous price in terms of bureaucracy that we have to go through to make sure that everybody gets a chance to play. It doesn't build long-term relations with suppliers; it fritters money around; it doesn't allow industry to build the relationships that can be efficient. Much like the Japanese have done, American industries are beginning to focus on a small number of high-quality suppliers able to make investments in plants and equipment and able to deliver items “just-in-time” with exceptional quality.

I think there'll be opportunities that come out of this review, if we take advantage of them. I think AMC, and certainly the rest of the Army, is doing well in proposing these issues. In fact, Mr. Betti's [Honorable John Betti, Under Secretary of Defense for Acquisition] task force is looking at the procurement regulations, laws, and practices, and I think that will help us to go back to Congress and say, “These had the intended effect, and here are the actual effects. They don't match. You need to correct or change these things.” So I hope that will help. We're able to look at our whole way of doing business.

We've started the process of really going to a zero-based program and budget. I've done it at the Log Center for 3 years. It's an arduous process. I certainly can't do it to the same extent in AMC, but my major commanders can, I think. In that, you look at every person who is employed doing something and ask, What is it you're doing? Do we need to do that? Why're you doing it? and Who do you give your product to? It's that kind of exposure that allows people

the freedom to ask, Well, just because it was done that way last year or 10 years ago, do we really need to do that anymore? I've really been hard on my Log Center directors to get to the zero-base, and they did it well.

I went out and visited Sacramento Army Depot several weeks ago—before I knew I was going to take this job and mainly as a follow-on to some work in TQM [total quality management], because Sacramento has implemented it. I was absolutely impressed with the maintenance directorate out there. It was enough to bring tears to your eyes. They've done, I think, a superb job of understanding their processes and understanding what their purpose is. They're focusing on their products, reorganizing by product-lines, focusing responsibility on managers for products, allocating their overhead to support those, and keeping only a very small piece back as sort of swing men, and putting responsibility for quality on those managers. The end result is nearly a couple-hundred-people-requirements were saved. They didn't need to fill those billets anymore. So I think that sort of thing comes of an exhaustive examination of how they did business. We're going to do that throughout AMC. It's already started in a lot of other places. I know General Wagner's really been pushing it, and I'll readily climb on that bandwagon, because I think that will help.

We need to work with industry in many of these areas. I know General Wagner's been pushing the certification programs so we don't have to go through these endless examinations with industry and lots of paperwork that really drive up the cost of our major as well as minor systems and drive up the cost of the repair parts we buy.

Logistician: Sir, since you've opened the subject of total quality management, do you feel that the TQM philosophy can be more quickly realized through training, or must it be an on-the-job learning experience to become institutionalized as the way we do business, or does it need to be a combination of both?

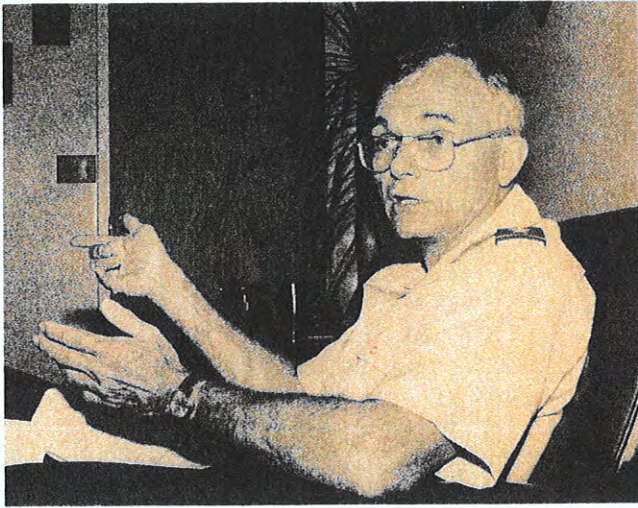
Tuttle: I think a combination. I guess I go back some years. Obviously the TQM ideas are not completely new. They've just been implemented over the last few years in ways that are very creative. I think our experience in converting what were essentially American ways of doing business to the Japanese and then back again, and seeing what you can achieve—you know, like defect rates of 2 parts-per-million or 3 parts-per-million as opposed to 150 parts-per-million—can be done through a variety of means and is certainly not new. I recall, 25 or 26 years ago, as I was finishing graduate school studies, that I was involved in case

study discussions of the same kind. The need and focus then was to look at the process; continue to look at your processes. They can be improved. Sometimes the method of doing that had just the opposite effect. The old way was to have a bevy of industrial engineers hovering over people doing time and motion studies. That was counterproductive; but even back in the thirties, with the Hawthorne Plant experiments, part of the Western Electric system, we found that worker participation had an awful lot to offer.

When I commanded 503d S&T Battalion, we had some difficult problems in the distribution process of our rations; our class II and IV distribution was utter disaster for awhile because of the people we had. We were at the tail-end of a draftee Army. So we went in there with the idea, Let's look at the process, and How can we better deliver to our customers what they want, what they need, and get our people involved so they enjoy what they're doing? So they don't feel they're in some dark, dingy warehouse in Hanau. These were World War II warehouses with stacks of [materiel] releases you'd have to go through to find an item in this not-very-good facility. As a result of looking at the processes in detail, we found out what the customers wanted in the division; and we essentially tried to meet their needs. We started delivering class I and got little teams together to go pick up and deliver to each brigade area, and I had Sp-4's sometimes in charge of the teams. We emphasized accuracy and quality, and the teams got direct feedback from customers. In our class II and IV operations, we went to a semi-self-service, although it was somewhat illegal—but I got sanctioned, luckily, by ODCSLOG to do that as a trial. But what we did was create a mess section, an administrative supply section, and a tool section, and we had kids there—you know, draftees, PFC's—in charge of them; keeping the stock up. Of course, we ordered and decided what to stock, but those people got to know their stock. They could be helpful to the customers, and the result was much better discipline in the unit and a heck of a lot better support.

The division commander used to bring people through there because he was so proud of it. It was that kind of thing. That's what you're seeing in Sacramento; that's what you're seeing in other places, where people are looking at their processes, getting their folks involved in how they can do it better.

We did this process review at Bayonne in the Eastern Area MTMC headquarters and got the Naval Productivity Center folks involved—quality circles were the thing. It worked. Well, all these mechanisms help, you know, as long as you keep the folks in top management on it. That's the key. The TQM processes all say the same thing. I remember the story that after the initial briefing on TQM at General Motors,



“We need to find ways to get better designed components into the field, to make the product improvements that will result in higher reliability and more maintainability. . . . A major effort I would like to push is again emphasizing our role as a supporter of the fielded system.”

Roger Smith, the GM CEO, was preparing to leave and Dr. Deming just walked right by him. “Without you here, I’m not going to be here either,” he said, and I think that’s the key.

I think there’s an exciting opportunity here, and it’s always been here; and there’ve been lots of organizations that do this well throughout the time of what I call our “quality bottom out.” I have a car by an unnamed manufacturer that’s a great symbol of that time. I keep reminding that manufacturer, whenever I get a chance, of what they did and what reputation they have as a result of it. But I think we can continue to do a lot more, and the Defense Management Review is certainly a way to stimulate us. I think pushing total quality management will have those kinds of effects.

It’s a long-term thing, but there’ll be some short-term benefits, as Sacramento has exhibited. They’ve done it in 2 years. But you have to commit to it and stay with it. You can’t just say it’s a new program and focus on it today and then next month it’s another new program and you focus on that. You have to build commitment to TQM.

Logistician: If I may, I’d like to focus on another area. Studies in recent years have questioned the ability of our domestic industrial base to support our forces in a future war. How do you evaluate the U.S. industrial base, and What does AMC need to do to contribute to industrial preparedness?

Tuttle: I come with intellectual baggage, I guess, on

this issue, having run the course in economics of national security for the Social Sciences Department at West Point back 20-odd years ago. At that time, we had a text (that I ended up not using) that was built on a World War II model of industrial preparedness. There’s still a lot of that thinking around.

It seems to me technological change is taking place so fast in our economy that it’s hard to envision industrial preparedness the same way we’ve done it before. We have to look at it in much different terms. People worry that the industrial base is becoming a service economy. The numbers don’t say that. The manufacturing share of gross national product is still 22.2 percent; it hasn’t changed in 20 years. The fact is that the growth employment in the service sector is an awful lot more than in the manufacturing sector. What that says is manufacturing has, because of international competition, been getting more efficient, more productive.

I think what we need to look at is that we’ve practically a full-employment economy at 5.2 percent unemployment, given people who are ordinarily changing jobs. Look at want ads and all the other measures economists use to calculate the relative employment level of the economy—the use of plant and equipment, efficient plant and equipment—when you’re up around 82 to 83 percent, you’re probably pretty close to full employment. So the question is, Does that say your industrial base is bad? I think one has to say it’s changing and changing rapidly.

You’re finding companies leaving the defense industry; and we worry about that, and there’s some cause for concern, it seems to me. But, at the same time, sales are down. Our defense budget is down. We’re buying less than we were 3, 4, and 5 years ago; so it’s a natural evolution, a thing you’d expect to happen. What we don’t need, I think, is defense industry sitting around, much like the monuments to—I’d say—inefficiency that you see along the Monongahela River around Pittsburgh; you know, the old steel plants the steel industry refused for so many years to modernize that the industry just got left behind by international competition. It wanted to protect itself, and it got left behind. Now it’s been forced to modernize, and you’re seeing that pace keep up, and you’re seeing that the number of people it takes to produce a ton of steel has gone dramatically down and the quality of steel has gone dramatically up. So those good things are happening. That’s just the nature of change, which is basically good.

I think our industrial base is still very good, but what we need to do is a much better job in the Nation of equipping our people to deal with technology. I’m still not really convinced that we’re so bad, because we still make some rather major breakthroughs in

technology and engineering, particularly in the high-technology business that defense is most interested in. We still could lead the world; but people like the Japanese and, to a lesser extent, the Europeans have been able to capitalize more on the consumer world in producing things and engineering equipment for the market that embodies that technology. We've not done quite as well, and that's a worrisome thing. We need to do a much better job with our available labor supply to make that 5.3 percent *not* our practical level of full employment. How do you do that? You do it with education, you do it with more skills, and industry has to participate as well as the Nation's school systems.

I think the base, itself, is certainly healthy. We have the strongest growth economy in the post-war years, continuous growth without recession since the 1982 recession, I guess. We in the defense sector need to take those measures that provide viable markets to industry so they compete for it. I think the measures we've taken lately to fully reimburse development cost with incentives for efficiency in full-scale development is the way to go—not to make fixed-price contracts in full-scale development. To stop that practice has been very healthy; and I think our procedures to bring competition into production are healthy.

We've seen General Dynamics [GD] entering the SINCGARS production business. It was a marvelously creative approach that AMC and CECOM [Army Communications-Electronics Command] used in structuring that contract, so that GD says, "Look, we'll bid no profit. We'll make ours by giving you better reliability." And that's exactly what we want—that kind of performance plus reliability. I think we need to work that, and I think we need to change our contracting rules so we recognize that there's a limited market and that everybody can't play. It's very inefficient for everybody to play. We need the stronger ones to play; the weaker ones need to do something else in the world. That would make it harder to enter the defense industry, but that's the price we've got to pay. We have to decide if we want to pay 10, 15, 20, or 25 percent more for defense products than we otherwise would have to at the expense of spending the money on highways or other things we need to spend on in the economy.

Basically, I look at healthy preparedness differently as a longer-term thing, rather than buying a lot of machinery and squirreling it away in mothballs. I think that is absolutely counterproductive. The kinds of wars we're likely to fight are probably going to be the smaller ones like Grenada, or even Vietnam, which allowed us time to build up; but we did that, certainly, in an inflationary way and one that wasn't competently done, but was driven by political exigen-

cies. I think if we concentrate on the kinds of items on the national agenda now we will buy industrial preparedness in flexibility—an ability to shift people to different jobs, to go from one-shift operation to three-shift operation, at least in the short-run, and have a work force that is better trained and flexible. I think that would be a helpful program of industrial preparedness.

Logistician: General Vuono [Chief of Staff, Army] in a *Defense '89* article said we've had great success applying technology. I'd like your opinion on how new technologies impact our doctrine and training.

Tuttle: Obviously, technologies are available to both sides—our potential adversaries as well as to us. For example, provide a way to increase the accuracy or the night-fighting capability of weapon systems or increase their lethality, then they change the way we do business. The night-vision capabilities that technology has given us, give us the capability to fight effectively at night, which would be a significant advantage over the Soviets if we ever had to fight them. They haven't quite gotten there in those kinds of capabilities—infrared, thermal imaging, and other technologies.

Technology has made a material change in our doctrine. Our heavy force modernization organizational concept envisions a different way of fighting than the way we did with the M60 or even the M1. So I think technology has had a profound effect on doctrine and also on training.

As we look at the increasing cost of munitions and the cost of just rolling the tanks out the back-40 at Fort Hood, we've sought a device-based training strategy. Why? Because technology makes that possible and costs make it mandatory. It wasn't possible before. In TRADOC, we're forcing ourselves to review these prospects. We certainly have the technological edge, and I think AMC's efforts have been in the forefront of providing it.

My concern, however, is that we're perhaps not bold enough at the early development stages, and that's a function of our conservatism. Sometimes in the near-term of our developments, we worry about using new technology—for example, VHSIC [very-high-speed integrated circuitry] technology—in some of the new systems, because it's not quite mature. We have to understand that to keep a technological edge, you have to take risks. As long as you take the risks in proof-of-principle stage and move those components along in prototype, you have a basis for gaining a technological edge. Otherwise, you may end up building new systems like DIVAD that really didn't give you the edge because you didn't push the state-of-



“Our supported forces in the field are the reason we exist in AMC; and no other reason. . . . The one thing that is always constant is change, and I know everybody in AMC appreciates that, but I’ll continue to push the message to everybody that we will change.”

technology as much as you could’ve early on. We seem to want to go immediately to full-scale development and production. What we get as a result is really an NDI [nondevelopmental item] approach. Well, NDI is just that. It’s old technology—O.K. for trucks—lousy for weapon systems.

If you’ve an immediate need—as we perceived we had an immediate need for a better air defense system than the Vulcan—then you may do that. But it seems to me we need to be very careful, particularly as we go to heavy force modernization, that we take advantage of the technology, even taking some risks.

Logistician: Sir, I’d like to go back to Mr. Stone’s interview where he predicted continuing difficulty in getting adequate budget resources. We are now experiencing a fifth consecutive year of decline in actual growth in Army funding. You’re about to become the manager, as it were, of AMC’s dollars and resources. What AMC mission area do you think should get priority?

Tuttle: We’ve a number of mission areas and a number of priorities, as you know, but the essential thing is to maintain balance. At any one time, perhaps, the demands will require some marginal changes in what the priorities are. I’ve said before, I think we’ve a major obligation to do the best job we can of supporting the systems that are in the field and to buy present readiness. That’s building on work, such as CECOM has done, in the low-density

systems—like the Firefinder radar, the intel collection, and the electronic warfare systems—where we have one’s and two’s out there in divisions.

I think that kind of concentration is where we really need to work and then build the support in terms even of redesign of components so we keep those systems viable for a long time. There simply is not the money to replace all those systems; but there may be money enough to modernize them, to do the product improvements to make them more viable and to last longer. I think, as I’ve said before, an emphasis should be on operational and support cost reduction. We have to invest to do that. I would hope we’d take some of our resources and invest where there are demonstrable payoffs. We have to do some analyses. We can’t just say I think there’s a payoff on this.

You know, you don’t get very far in front of a board of directors in a corporation when you say, Hey, I need \$10 million to put this product out, or buy this new piece of machinery. You do a very thorough analysis of what the costs and benefits are. You look at your downstream flows and make sure you’re relatively comfortable that you can do that. We need to do the same thing. I’m not sure we’ve done that.

Part of our problem is not making product improvements. Probably, we don’t sell them very well. We don’t do the analyses necessary, and it’s hard to pick from among the available options people are trying to offer, including the contractors who offer improvements, obviously, as part of their marketing strategy—and bless ’em for it.

Logistician: General Wagner has been quoted as saying that we have reached a point where we must say that “we will do less with less.” Do you subscribe to that philosophy?

Tuttle: All things being equal and if nothing else changes, that’s clearly the conclusion one has to arrive at. He’s absolutely right. I think he hopes, as do I, that we can change the way we do business in some areas. For example, AMC had to hire more procurement people because of the Competition in Contracting Act, simply to do the paperwork, prepare the proposals, get them out to all the people, and review the bids. That’s an enormously expensive process. We now have to have people out certifying plants, doing quality reviews, and doing inspections. If a firm has a good record, why do I need to do that? If we can change those practices, again the efforts that he’s started, I really think we won’t have to do less in all areas. In some areas, we clearly may have to, because of the magnitude, that in the short-term, you simply can’t accommodate. You can’t make the necessary

changes in the short-term.

We're going to struggle with that challenge, obviously, and see what can be done. Meanwhile, we have to try to make sure the senior leadership in AMC—as in the Army—keeps its eye on the changes necessary to do our job better. I think that's the role we want to press on with.

Logistician: As a preliminary to a concluding question, I'd like to offer you this quote: "We logisticians must remind ourselves that we exist only to serve our customers, and we serve them best when our systems get our products and services to customers as quickly and easily as possible." Those words were written in 1975 by *Lieutenant Colonel* William G. T. Tuttle, Jr., and published in an *Army Logistician* article called "Rapid Fill." Do you believe that statement is still applicable today, and what would you ask each of us in the Army's logistics community to do to translate those words into actions?

Tuttle: I'd feel very badly if I had to eat my own words, so I don't intend to. Of course I feel they're as applicable today as they were then. Our supported forces in the field are the reason we exist in AMC; and no other reason. The Nation pays a great amount of money to keep 113,000 people employed and to buy 20-some-billion-dollars worth of purchases each year to make all this work.

I think that focus has been at AMC all along, and I think General Wagner has tried to focus it even more sharply. I will certainly continue to do that. I gave you, early on, the example about the little company in the 503d S&T Battalion supporting the division with fairly mundane kinds of things. But it makes a tremendous difference if you have the customer orientation, if you talk to your customer, if you know the customer—the supported organization and what the needs are. You can help them out as well as supply their needs.

I think we need to do what some of our big companies do, go in and sometimes persuade a customer of the way to articulate his needs, much like some of our big computer manufacturers do in their selling techniques by sending in customer engineers. They go in and say, "Here's the problem. Now with my background and my company, maybe I can show you how to solve that problem."

That's what the objective supply system has been, and I think that's the approach we need to take, perhaps, in matters of component repair—much like we've talked about the special repair activity at Rucker and enlarging its responsibilities. We need to go to Forces Command and U.S. Army, Europe, and say, Here are some different ways of doing business that we think will help you. It'll help you conserve resources; it'll

help you in doing your job. I think we need to market that approach to those we support. I think they're ready for it. We've done that with automation at the Log Center. We've a continuing vital dialogue with the customers in the field.

The hard thing to do is know who your customers are. I'm a great believer in getting down to the motor pool and talking to the maintenance sergeants, the battalion motor officer, the maintenance tech, or the supply sergeants and understanding from their perspective what the issues are and then going and trying to clear that through the chain of command. But the staff officers at the MACOM headquarters and other intermediate headquarters don't always have what I call the up-to-date perception. They may think they do, but very often my experience has been that the more profitable kinds of changes come about as a result of the visiting. I intend to do that. I don't mind going down and rummaging around in PLL's and asking clerks what their problems are.

We find everything from cataloging problems that need to be fixed to the fact that we've done something dumb. That's always going to happen in a big organization. Can't be defensive about it. We need to say, What needs fixing? What's the perception? Is the perception accurate? and then get some people to walk in and look at it, talk about it, see what's the reasonable fix, who's responsible, and then get on with fixing it.

There's a system Sy Lorber [Deputy Chief of Staff for Product Assurance and Testing, AMC] and I discussed many times when I was in OTEA for tracking the fixes we needed to make on systems before we fielded them. It's what we're doing in the post-fielding reviews now, and we're going to do that—it's part of the game.

I hope customer support really becomes the hallmark of each of us in AMC. As I talk to folks at New Cumberland—I visited there about a year and a half ago—and Sacramento, and Tooele—I was at both those places this year—I find that understanding. I'm not at all apprehensive about my needing to come in and beat on people to understand customer support. They have it. I'm just going to continue to support it. It's going to be an important part of our task to concentrate on customer support.

Before we conclude, let me just make a couple of comments in terms of where one goes in this job—I guess just to reiterate. This, obviously, will get published after the change of command; so I think it's probably relevant to talk in terms of, perhaps, shifts in emphasis—and maybe they're not shifts—it's not clear that they're shifts. But one of the things we need to do, as I mentioned before, is focus on the customers. That's clearly been General Wagner's objective and his pursuit. We'll focus on the three major missions: we'll



“Obviously, the American people buy an Army to fight, and the reason we have logistics forces is to have enough capability to sustain the fighters.”

support the field, which is really support of the customers; and we'll acquire for the field army the non-major systems the Army needs—for example, the tool sets, if they're not managed by PM's, and shelving and all those 530 non-major systems; and we'll support the PEO's, our other customers. I think that's our outside world at AMC—our external environment. Obviously, our customers are first and foremost. That's what we exist for, and that's what the focus is going to be.

The other part of our external environment is that we have to be conscious of and adapt to the changes in defense posture. We need to think ahead of how we're going to accommodate them. The one thing that is always *constant* is *change*, and I know everybody in AMC appreciates that, but I'll continue to push the message to everybody *that we will change*. Either we'll do it intelligently ourselves or someone will do it for us. The better way is to look inside ourselves and see how we can adapt, how to do our processes differently, how to do them better, and how to do them with less input, less labor, and less material—that's the necessity.

To do this, we're going to look internally in terms of processes, and *we're going to go to a zero-based system of some kind*. The “how's” need to get worked out, but I intend first to go around and visit each installation and each major subordinate command and ask commanders to explain to me in great detail how we do business. I guess I've been a part of the Army that has rejoiced in getting into detail. I've been through more functional area analyses, post-fielding reviews, and training reviews than most, and getting generals' noses into nitty-gritty is where I come from. It's an essential part

of our business. If we don't do it, then we're not really being responsible.

Our folks will see that I'll go and look, because I'm rusty, for instance, on procurement. It's been a long time since I learned that business. I'll be going to the national inventory control points and getting folks to lead me through the exact process they go through in doing their jobs—from the requisition from the field to the supply control studies—all the way through the process. We'll lay it out, and we'll look at it between commands. We'll see what CECOM does that TROSCOM's [Army Troop Support Command] not doing and vice versa. We'll spend some time in that kind of business.

Yes, it's agonizing, and I understand that; but I've grown up that way in the Army, and I'm a believer that that's what one has to do to make sure the organization responds and truly understands what goes on. Then we can see where the soft spots are, where we're doing something we no longer need to do, or where we may be doing it in a way that someone else has already improved on and we just don't know about it. I think that's the way we have to focus on the process.

I think lastly, going back to what I said at the beginning, is the necessity to create that *seamless logistics system*. That, certainly, will be a major focus of work that will go on.

I've neglected a couple things—I haven't talked much about tech-base development; I haven't talked much about a thing I worked really hard on at the Log Center and that's taking care of our work force—the soldiers and their families and the civilians. I certainly intend to do that here at AMC.

Our environment is another thing. We have major environmental challenges at AMC, and I understand that. We've got to clean up the work of a couple of generations, and that's going to be expensive. The Nation has got to decide if it wants to do that and how much it wants to do. I look at environment as a national problem, and I look at our AMC problem as not doing any more damage to it. So we have to use some of our resources to do that. We have to look at our installations, and I think we do a good job in the installation of excellence [IOE] area. Sacramento proudly showed me their award in the IOE competition, so that award says that concern for soldiers and families resides in our leadership; and it will continue.

It'll be interesting for us to see what changes the Defense Management Review will bring, and we'll work very hard to adapt to what the Army expects of us. We'll maintain in AMC a continually improving command in response to the Army's needs.

Logistician: Sir, on behalf of our readers throughout the Army, thank you for talking to us. **ALOG**



DSA Displacement: How Much Time?

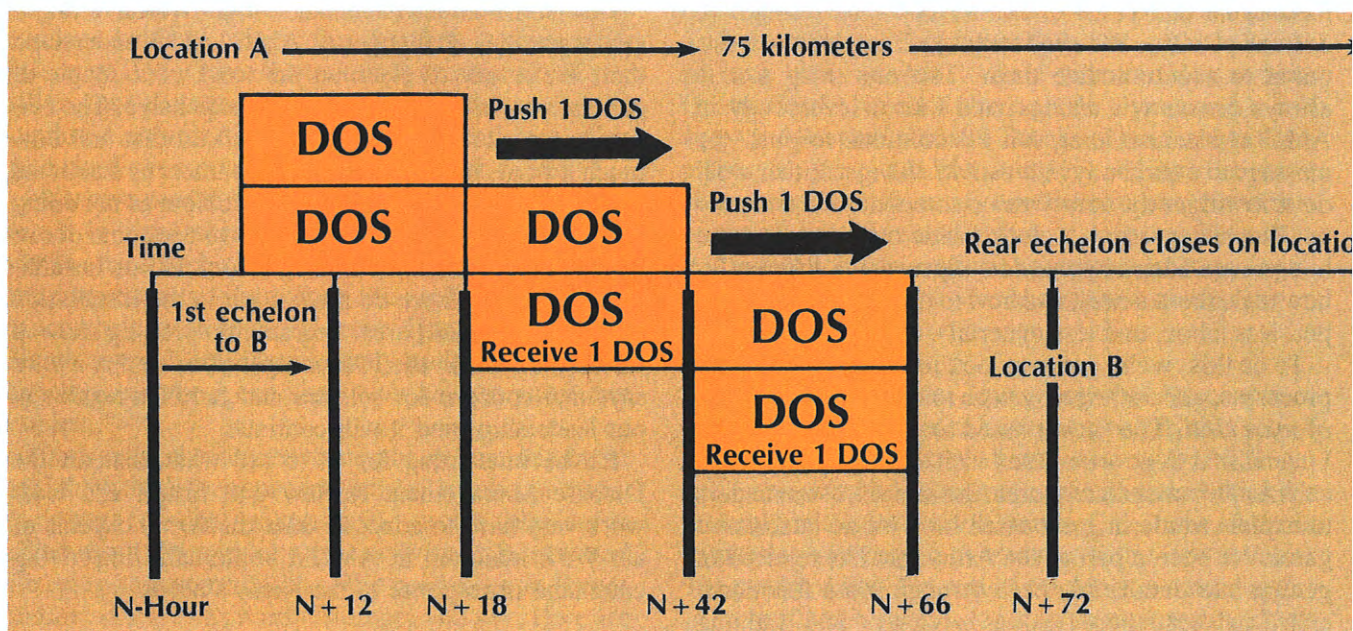
by Major Robert T. Dail

Since the early 1980's, AirLand Battle doctrine has challenged combat service support (CSS) commanders to keep pace with highly mobile, mechanized forces on a fluid and nonlinear battlefield. The support base has received greater attention in recent years because modern, mechanized forces cannot perform for extended periods on the AirLand Battlefield without support. It is therefore imperative that maneuver and support unit commanders learn to appreciate the considerations of support area displacement and its effect upon current and future operations. The movement of the division support area (DSA) weighs heavily on the tempo, initiative, and agility of any combat operation.

Little has been written about DSA displacement. There are no charts, tables, or matrices in field

manuals or staff handbooks to provide complete "how-to" instructions for staff officers. Current doctrine does, however, provide a guide for officers making their estimates and recommendations. FM 63-2-2, Combat Service Support Operations—Armored, Mechanized, and Motorized Divisions, states that CSS units should displace if they are to survive and successfully support combat operations over manageable lines of communication. The term "displacement" is used to identify the forward and rearward relocation of support areas and units during offensive and retrograde operations. It is also used to describe short movements to enhance survivability.

A particular division's requirement to displace its support area depends upon several considerations. The division's mission (current and future), in-



□ Supply support for displacement of the main support battalion from point A to point B.



telligence preparation of the battlefield (including the division and corps rear areas), initial support area locations, the distances between the brigade and division support areas, and the commander's intent all significantly affect displacement planning.

Likewise, support area configuration depends upon many things, most notably mission. The chart on pages 48 and 49 shows typical personnel, equipment, and supply densities.

Before examining DSA displacement, we should first review displacement data on the brigade support area (BSA). Experience at the National Training Center (NTC), Fort Irwin, California, has demonstrated that a BSA containing units supporting a two-battalion brigade task force can relocate 15 miles (24.2 kilometers) and begin support operations from a

new location within 14 to 16 hours. Some elements can accomplish this in less time. All organizations in the BSA displace using organic transportation assets.

The 14- to 16-hour requirement at NTC may be used as a planning base for BSA displacement. Considering the additional units, supply buildup, supplemental transportation requirements, and traffic congestion generated by increasing the size of the brigade from two to three or four full battalions, we may expect a significant increase in the time required to displace. An estimate based on required road clearances and equipment densities suggests that the total time required from initial reconnaissance to final closure may range from 24 to 30 hours. This estimate may, in fact, be conservative because it does not take into account uncertainty and friction.

Displacement of the DSA is a much greater undertaking; it is accomplished through either deliberate or hasty planning and action. Deliberate displacement usually results from a change in mission or from a doctrinal requirement to maintain specific distances between brigade and division support areas. Degradation of CSS is coordinated in advance. Deliberate displacement is characterized by detailed planning and phased execution. Its objective is to provide uninterrupted support while maintaining a secure division logistics base.

Hasty displacement occurs when the DSA is in danger of destruction or has been seriously compromised by enemy reconnaissance or attack. The planning involved in hasty displacement normally takes the form of a "breakout" or "reaction" plan that is designed to quickly move and protect essential elements of the DSA. Plans to decrease support should consider mission, enemy, terrain, troops, and time available.

Hasty displacement is usually forced upon the division support command (DISCOM) commander. Preserving personnel and critical supplies is the primary consideration during relocation. Command and con-

Displacement Timeline

- At N hour, the division support area (DSA), located at A, begins to move toward B.
- FM 63-21 directs the division to maintain 3 days of supply (DOS) for direct support—1 DOS by the forward support battalion in the brigade support area (BSA) and 2 DOS by the main support battalion in the DSA.
- Upon notification to displace, DSA units begin to echelon personnel and equipment to a new location (B).
- At N+18, the main support battalion pushes 1 DOS forward from location A. One DOS is received at B from corps by the 1st echelon.
- At N+42, another DOS is pushed forward from location A. Trucks used to deliver this DOS return to location B. Meanwhile, a 2d DOS is received at location B from corps.
- At N+72, the final echelon of personnel and equipment close on location B, 75 kilometers from A.

trol elements, replacement personnel, casualties, and essential quantities of supplies of classes III (bulk petroleum, oils, and lubricants), V (ammunition), and IX (repair parts) receive immediate transportation priority.

During a hasty displacement, the division transportation officer controls the movement of the DSA by coordinating the move with the DISCOM movements control officer, the corps movement control center, local highway regulating teams, and traffic control points. Communications requirements alone make this a difficult task. Furthermore, once displacement begins, congestion along routes in the division rear may prevent corps truck assets from conducting throughput operations to both old and new support locations.

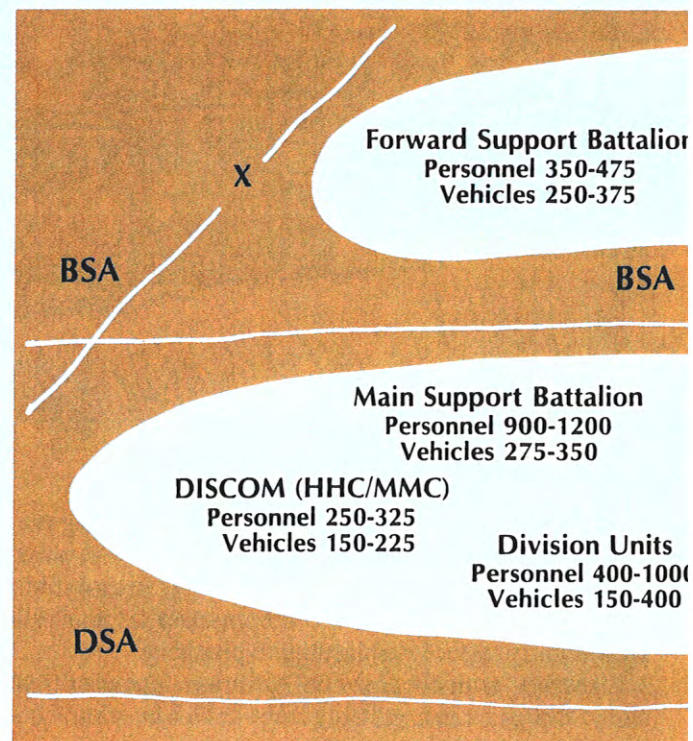
By examining requirements of the main support battalion (MSB), the largest battalion in the DSA, we can determine an estimated time for deliberate displacement. In making this estimate, we will assume that the MSB will require more time to displace than any other unit operating in the DSA.

The MSB will conduct deliberate displacement by moving its headquarters and six subordinate companies in echelon order. Reconnaissance and security teams, supply personnel, and equipment to establish the new support area will comprise the lead elements. These elements will be mutually supportive at the new location. DISCOM, MSB, and company executive officers will deploy with these lead elements to establish command and control and form the nucleus of the forward command posts in the new DSA location.

Meanwhile, the DSA will continue to maintain the capability at its old location to make final issues, complete repairs to damaged equipment, and direct transportation assets to the new DSA location. The DISCOM will coordinate with the corps, through the division materiel management center (DMMC), to discontinue the delivery of stocks to the previous supply points and begin delivery to new locations.

The chart on pages 46 and 47 illustrates a displacement of the MSB from location A to location B during deliberate displacement. The chart shows 2 days of supply in the MSB and 1 day of supply in each BSA. The distance between location A and location B is 75 kilometers.

The MSB receives its mission to displace at N hour. The battalion headquarters and subordinate companies move personnel, equipment, and reconnaissance teams forward by echelon to the new support area (location B). During this initial period the DISCOM requests that the corps discontinue deliveries to location A and, at a prescribed time, begin delivery to location B. Based upon doctrinal time and distance factors and expected rates of information and vehicle travel, it will take an estimated 6 to 8 hours before



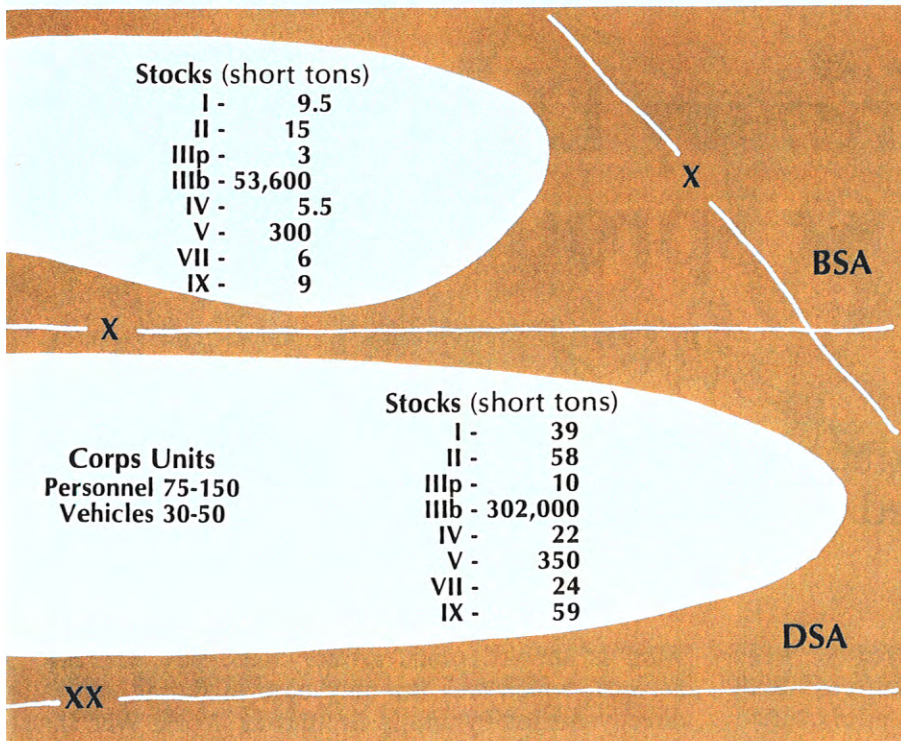
corps truck drivers can begin to respond to a change in mission reflecting new DSA destination points.

While the trail elements of the DSA continue to move supplies to the BSA's, elements of the DSA begin to displace to location B. The trucks used to deliver the final day of supplies are the final elements of the DSA to close on location B. Using the MSB as a guide, the DSA will require a minimum of 72 hours to conduct an echeloned, deliberate displacement over 75 kilometers while providing continuous support. This estimate is conservative, as was the previous estimate for the BSA.

An alternative to an echeloned, deliberate displacement is a complete halt of all operations and a simultaneous "jump" of all DSA units. This "wagon train" approach has some advantages. Although not a "hasty" displacement, it takes less time to completely displace all elements and it facilitates better command and control by commanders at all levels.

The risks associated with such action, however, are considerable. A maneuver unit may find itself out of supplies if all support is shut off. Additionally, this method requires support units to haul all of their on-hand stocks. This may be possible for BSA units but is highly improbable for DSA units. A well-planned deliberate displacement by the DISCOM, executed by predetermined action, ensures continuous support operations while providing security for the support base.

Maneuver commanders should know the considerations and principles of support area displacement



□ A typical configuration of the brigade and division support areas.

because they significantly impact combat plans and operations. As CSS assets and supplies are moved and massed at various locations in the division area, "windows of opportunity" will result in which initiative is sustained. Simultaneous displacement of both BSA and DSA or the displacement of one or the other at an inopportune time may prevent the commander from taking offensive action or making the proper response to an enemy advance.

For example, a division commander who is concerned with maintaining combat power and freedom of action may direct stockpiling operations in a BSA that supports the main tactical effort before displacing the DSA. Stockpiling will compensate for the ground transportation support diverted to displacement operations.

Because current doctrine places control of aviation assets (C-130 transports and CH-47D helicopters) at the corps level, airlift may not be available to offset the loss of division transportation assets. Stockpiling prior to a DSA displacement may be critical to maintaining logistics support in the main battle area.

Displacement of the DSA presents a planning dilemma to both staff and commanders. The loss of support tends to slow the tempo of battle and focuses the staff's attention on the rear area. Maintaining command and control over extended lines of communication while providing security to the support base is a complex problem that must be considered prior to displacement. It will take a conscientious and well-thought-out decision to displace the DSA. It is a great undertaking that competes with the sustainment effort

for time, equipment, and manpower.

AirLand Battle doctrine does not provide commanders with handy guidelines for displacing the DSA. If doctrinal distances between the BSA and DSA are maintained on the battlefield, it is likely that the DSA could displace once every 3 to 5 days. If this occurs, the DISCOM and other rear units can expect to perform constant displacement planning and operations.

Commanders must assess the risk of decreased support in return for a more secure DSA. They should ask, "How long can the command risk reduced levels of support? Which units will receive priority of support during displacement? Will displacement prevent the massing of combat power at a critical time and place?" If these questions are not asked and considered, then future division commanders and their staffs may find themselves unable to demonstrate agility, initiative, and synchronization. An understanding of the DSA and its displacement is required if we are to gain full advantage of AirLand Battle doctrine.

Major Robert T. Dail is a Transportation Corps officer serving as the Deputy Assistant Chief of Staff, G4, 24th Infantry Division (Mechanized), Fort Stewart, Georgia. He holds a bachelor's degree from the University of Richmond and a master's degree from Boston University. He is a graduate of the Army Command and General Staff College and the School of Advanced Military Studies.

The Veterinary Detachment That Almost Sprouted Wings

by Colonel L. Paul Williams, Jr., and Richard Pennock

A typographic error in a computer entry almost transformed a veterinary unit into an aviation unit.

Have you ever had mail delayed—or, even worse, lost—because a ZIP Code was misread? Both machines and humans can make such errors, often causing strange things to happen. When a series of such errors occurred in connection with the 549th Medical Detachment (Veterinary Services), the unit almost sprouted wings. Out of the blue, aeronautic supplies, unrelated to the unit's earth-bound mission, began to arrive.

In 1981, the 549th Medical Detachment (VS) was established in the Oregon Army National Guard and assigned to Camp Rilea Training Site, located 7 miles south of Astoria at the mouth of the Columbia River. Recruiting efforts resulted in four of the six slots in the unit being filled by late 1984. From inception to late 1984, the unit received a steady stream of incoming supplies—M880 trucks; generators; light sets; egg inspection sets; weapons; mission-oriented, protective-posture gear; field veterinary sets; and much more.

Early in 1985 an interesting change in the supply stream took place. Six shop-sized air conditioners were delivered to the supply activity in the name of the 549th Medical Detachment (*Augmentation*), followed shortly by 18 aircraft helmet sight assemblies and several boxes of foul-weather parkas. The unit realized an error had occurred and dutifully returned all items to the manufacturer. But the materiel did not stop arriving! Fuel cells, gearboxes, barrels of filter fluid, engine turbine fans, and OV-1 airframe hot air valves were shipped or were scheduled to be shipped to the 549th. The total cost of these items was startling.

At first we wondered if our location near the ocean was responsible for the error in shipments. Perhaps some thought this was a military port. It is not. Camp

Rilea is an old coastal artillery base next to Fort Stevens, which was the only base in the 48 states directly shelled by enemy fire during World War II. Used by Army National Guard troops after World War II, it was activated in 1976 as a major training site for the Oregon Army National Guard. Because of the many training facilities on the camp (a moat site and several ranges, for example), it has been used by elements of the Active Army, the Marine Corps Reserve, the Air National Guard, and the Naval and Coast Guard Reserves, in addition to many and varied Oregon Reserve component units. Annual usage the past several years has been approximately 60,000 man-days a year. No Army aviation or Air Force Reserve units have used the facility except for drop zone practice.

The 549th Medical Detachment (VS), 60 guardsmen from other Oregon units, and 50 full-time personnel support the troops. It is worth noting that the Camp Rilea supply facility, which was receiving these aircraft-related supplies, measures only approximately 5,000 square feet. It was three-fourths occupied by materiel to be used at the camp!

We needed help! In April 1986, we called a traffic management specialist at the Army Aviation Systems Command in St. Louis, Missouri, with questions. "Why is this continuing to happen to us and the Camp Rilea supply personnel?" "Why don't these companies wonder why their goods are going to a small medical detachment on the coast of Oregon?" And "Where are these items supposed to be going?" Through a series of referrals, we found the answers to many of our questions.

Sometime in the past (probably in 1984), "VS" was erroneously entered into a computer as "AUG," a



perfectly legitimate abbreviation for *augmentation* units. The result was that a phantom unit was created—the 549th Medical Detachment (*AUG*). Here was a unit without a Department of Defense activity address code (DODAAC). One was therefore assigned—W80082. The unrequested materiel we were receiving was supposed to be sent to the 200th Theater Army Materiel Management Center (TAMMC) in Zweibruecken, West Germany. Their DODAAC was W800B2 but being read as W80082.

The answer to the second question of why the contractor did not question the shipments has several parts. The various shipments were being made directly by contractors (not Army depots), who were following the consignment and marking instructions contained in the contract. The contractors' shipping departments had little reason to question why a medical detachment at some strange place named Camp Rilea was being sent the packaged materiel. The contractors had the DODAAC, and they shipped the goods.

Soon our wings were clipped. We were referred to what was the Army Materiel Command Central Systems Design Activity-East, at Letterkenny Army Depot, Pennsylvania, where DODAAC's originate, and the 549th Medical Detachment (*AUG*) was expunged from the records along with its TAMMC look-alike DODAAC.

In June 1987, we returned gear boxes to Bell Helicopter and helped move shutoff valves from Garrett Pneumatic Systems to their proper destination. When power inverters were received from Bendix in August 1987 addressed to the 549th Medical Detachment (*AUG*), we worried about another phantom unit in the making. Even as late as June 1988, we had to

return slip ring assemblies to a manufacturer in Virginia. Some apparently still believe in the existence of the 549th Medical Detachment (*AUG*).

Some questions still remain. How many thousands of dollars were lost in reshipping this materiel? How many pieces of Army aircraft and associated support equipment were out of service because Camp Rilea had received someone else's supplies? How many other phantom units are on the books waiting to put the whammy on the supply system? We hope the answer is *none!*

The last remaining question is, "Will the 549th Medical Detachment (*VS*) ever fly, or is it destined for a terrestrial existence with travel only by two trucks with attached trailers?" We guess that the answer lies in someone's computer. We were so close to getting this unit off the ground (the sergeant in the unit is a licensed pilot), which would have been a first for the Army Veterinary Corps. We even had our unit crest roughed out: Icarus lifting a crate of eggs into flight, and the motto *Semper Inspectus* affixed!

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Richard Pennock was a traffic management specialist, Army Aviation Systems Command, in St. Louis, Missouri. He is currently on the staff of the Army Plant Representative's Office at the McDonnell Douglas Helicopter Company, Mesa, Arizona.

ARMY DEVELOPS OPERATING AND SUPPORT COST GUIDELINES

In an attempt to identify all elements of steadily rising operating and support (O&S) costs in maintaining its helicopters, the Army has completed an exhaustive O&S cost study. This study represents the first attempt to quantify the total O&S costs for aviation. Methodologies and data sources developed during the study are being refined to support an O&S section planned for future editions of the Army Aviation Modernization Plan (AAMP). This new section will correct the Army's primary deficiency, the lack of a reference guide for addressing O&S shortfalls among competing interests. These three areas are planned for inclusion in the AAMP—

- O&S funding profile. The funding profile will reflect the O&S funding status in all appropriation accounts for all systems managed by the Army Aviation Systems Command for the budget and program objective memorandum years. Requirements, funding levels, and shortfalls will be included.

- Prioritization plan. This section is intended to serve as a guide for budget and systems managers to use if and when funding decreases are mandated during the execution year. This plan will fully support the readiness of forward-deployed aviation units and sustainment of their warfighting systems.

- Cost reductions, constraints, and initiatives. This section will outline O&S cost reduction successes, ongoing constraints, initiatives, and emerging technological concepts that can reduce O&S costs in current and developmental systems.

By documenting these areas in the AAMP, the Army will gain greater visibility of the many O&S costs and thus support the planning, programming, budgeting, and execution cycle.

BROWN BOOK IDENTIFIES LOG NEEDS

The first issue of the Army-Air Force Logistics Research and Development Program Book ("Brown Book") has been published. Representatives from the Army's Office of the Deputy Chief of Staff for Logistics, Army Materiel Command headquarters,

and Army Logistics Center worked with Air Force personnel to produce a joint issue of the Brown Book, which had previously been an Air Force publication.

The Brown Book identifies the Army's logistics research and technology needs and current work efforts. This information is of special interest to Government agencies and independent firms that could perform the research and development tasks.

Army needs-statements in the Brown Book are based on logistics research and development priorities identified in the Army Materiel Command Logistics 21 planning document, the Army Training and Doctrine Command's battlefield development plan, and the Army long-range logistics plan. Work packages associated with each need were developed by Army experts and approved by a logistics research and development general officers steering committee for inclusion in the book.

To request copies of the Brown Book, call AUTO-VON 290-3557 or commercial (202) 394-3557.

COMMAND AND CONTROL CONTRACT AWARDED

The award of a \$22-million contract is the latest step toward implementing the multibillion-dollar Army tactical command and control system (ATCCS) program. The Army Communications-Electronics Command has awarded the 2-year contract, with three 1-year options, to General Electric's Aerospace Military and Data Systems Division. The contract calls for integrating five computer systems and three tactical communications systems that are considered critical for battlefield command and control. General Electric will work with private developers and Army program managers for each system to ensure interoperability.

The five computer systems that make up ATCCS will help commanders make decisions and command their forces on the battlefield. These systems include three that are currently under development: the combat service support computer system, the advanced field artillery tactical data system, and the forward area air defense command and control system. ATCCS also includes the all-source analysis system, which provides intelligence information, and the maneuver control system.

The ATCCS computer systems, all of which will be fielded by 1993, will work together when integrated with three of the Army's tactical communications systems. The communications systems to be integrated include the Army data distribution system that is currently under development, the single chan-

nel ground and airborne radio system (SINCGARS), and mobile subscriber equipment (MSE).

TIEDOWN DRAWINGS ENSURE AMMO SAFETY

For safety, ammunition must be properly secured on tactical vehicles at all times. Many new tactical vehicles are not heavy enough to handle the shifting weight of unsecured ammunition. Experts at the Storage and Outloading Division of the Army Defense Ammunition Center and School (USADACS) can help units plan for safe loading and tiedown of ammunition.

USADACS develops tiedown drawings for all commercial and tactical vehicles that can carry ammunition. Tiedown drawings should be examined before loading ammunition on a vehicle. To order drawings for any vehicle, write to—Director, U.S. Army Defense Ammunition Center and School, ATTN: SMCAC-DEO, Savanna, IL 61074-9639. Questions about the drawings or about nonstandard vehicles can be sent to the same address or referred to William Frerichs, AUTOVON 585-8927 or commercial (815) 273-8927.

USADACS offers a 24-hour hotline to assist those with tiedown problems. The hotline number is AUTOVON 585-6030 or commercial (815) 273-6030.

SEASHEDS ARE TESTED

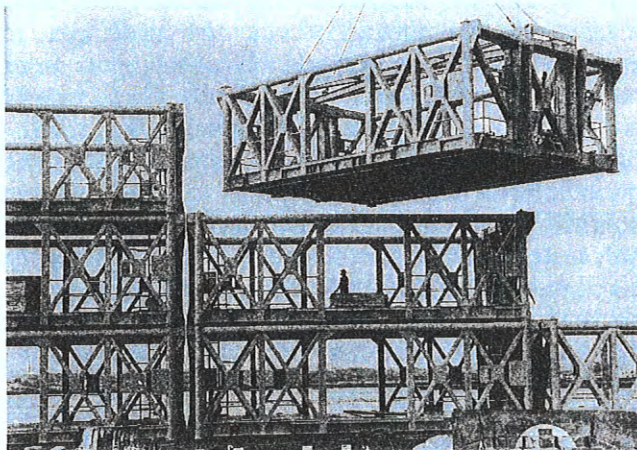
The Military Traffic Management Command, Eastern Area (MTMC-EA), recently tested a Department of Defense mobilization and deployment plan to convert commercial containerships for transporting breakbulk cargo and military vehicles. To make the conversion, MTMC-EA outfitted container cargo ships with seasheds.

Seasheds are large, steel containers that are designed to be stacked inside the hold of a container cargo ship. Containerships outfitted with seasheds can handle heavy cargo, such as M1 tanks, that ordinarily cannot be containerized.

Seasheds, which are designed and built by the Navy, are three times the width of standard cargo containers. They measure 25 feet wide, 40 feet long, and 12 feet deep. Each seashed has a floor that folds up so that when several seasheds are stacked, cargo can be lowered through one seashed into another. As each seashed is filled, the floor above it is lowered into place so that more cargo can be loaded on top.

Testing, which took place last fall, began at Military Ocean Terminal, Bayonne, New Jersey, where 33 seasheds were loaded on 3 barges. The

barges carried the seasheds to Howland Hook Terminal, Staten Island, New York, where they were stacked in the hold of a container cargo ship, the *SeaLand Consumer*. The ships then traveled to Dundalk Marine Terminal, Baltimore, Maryland, for cargo loading.



□ Seasheds are stacked on a barge at Military Ocean Terminal for shipment to Howland Hook, where they will be loaded on a container cargo ship.

ARMY FOCUSES ON MATERIEL RETURNS

Faced with a decline in the rate of return of unserviceable, depot-level repairable, secondary items (those with recoverability code D or L) from the field, the Army Deputy Chief of Staff for Logistics is putting renewed emphasis on the materiel returns program. Although major commands returned over \$2-billion worth of unserviceable depot-level repairables for repair from July 1988 to June 1989, the Army did not meet its 85-percent return-rate standard. The Army will increase cost savings and improve its sustainment posture if the major commands can consistently meet the return-rate standard, which was recently increased to 90 percent.

Problems and recommended improvements in the materiel returns program were reviewed during the Army-wide Semiannual Materiel Returns Conference last September. Plans call for the next conference, scheduled for this spring, to be expanded to include installation representatives.

The Army's materiel returns program was established to increase returns of excess unserviceable repairable items to wholesale depots and to prevent improper disposal of such items at local Defense reutilization and marketing offices. The cost of repairing unserviceable depot-level repairables can often be 70 percent below the cost of acquiring new items. Unserviceable repairables can also be repaired and

returned to the supply pipeline 75 percent faster than replacements can be procured. The availability of items in critically short supply should increase if materiel is properly returned.

To assist commanders and logistics managers in better managing their return programs, the Logistic Control Activity distributes the recovery improvement program reporting system report each quarter and the retrograde intransit visibility report each month to the wholesale and retail levels. These reports provide detailed information on organizational return-rate performance and should be scrutinized during periodic reviews.

When return rates fall below the 90-percent standard, materiel management centers, installation supply divisions, and major commands must take steps to improve their performance. Commanders should ensure that they are always informed about their organization's return rates.

HAND-HELD CHEMICAL MONITORS FIELDED

A new, portable chemical agent detector is being fielded to Army chemical units. The M1 chemical agent monitor (CAM) can detect chemical agent vapors or residues in less than 1 minute. The CAM is used to locate chemical contamination on people, vehicles, equipment, and terrain. The lightweight monitor can discriminate between the vapors of nerve and blister agents.

The Army Chemical Research, Development, and Engineering Center, Aberdeen Proving Ground, Maryland, and the Army Office of the Project Manager for Nuclear, Biological, and Chemical Defense Systems coordinated development and delivery of the CAM's. The first 1,260 CAM's were manufactured by a British firm, and 10,140 additional units are being produced by an American firm. More than 20,000 monitors are expected to be fielded by 1998. Future requirements will be met through competitive procurement.

The Army Chemical School at Fort McClellan, Alabama, received the first 84 CAM's for use in instruction. More than 800 CAM's were issued last fall to chemical units in West Germany, Italy, Turkey, Greece, and West Berlin. CAM's are now being issued to other units located in the United States.

The CAM was used successfully by a United Nations mission investigating allegations of the use of chemical weapons in the Iran-Iraq War. Those involved in the investigation reported that the CAM detected the presence of mustard agents in soil samples and munition fragments collected from both countries. They reported that the CAM was easy to

carry, provided adequate protection against exposure to chemical agents, and detected chemical vapors in low-contamination areas.



A soldier uses a hand-held CAM to check an armored personnel carrier for chemical contamination.

MOBILIZATION STATIONS GET TRANSPORTATION PLANNING HELP

The Military Traffic Management Command (MTMC) recently completed fielding the initial operating capability of the transportation coordinator automated command and control information system (TC ACCIS) to 20 sites in the continental United States. TC ACCIS is an automated system that assists Army mobilization stations in planning the movements of deploying Active Army and Reserve component units and their equipment.

When fully operational, TC ACCIS will provide 48 mobilization stations with timely and accurate data on unit deployments. The system will contain approximately 51 functions in 5 modules—equipment list processing, rail load planning, highway movement planning, shipment planning, and external interface with U.S. Forces Command and MTMC area commands. TC ACCIS should be fully operational at each mobilization station by the end of fiscal year 1991.

ARMY FORMS NEW COMMAND

Officials at the Pentagon have announced that U.S. Army Western Command (WESTCOM) has been redesignated U.S. Army, Pacific, or USARPAC. U.S. Army, Japan, which has been a separate Army major command in the Pacific, will now be a major subordinate command of USARPAC. The 6th Infantry Divi-

sion (Light) and U.S. Army Garrison, Alaska, former U.S. Forces Command units that recently were placed under WESTCOM, will also be under USARPAC command.

In addition to Army units in Alaska and Japan, USARPAC will command the Army Support Command, Hawaii; the 25th Infantry Division (Light); and the 45th Support Group—all in Hawaii—and the Army Chemical Activity on Johnston Atoll. USARPAC will have operational control of the 1st Battalion, 1st Special Forces Group, on Okinawa.

Command headquarters will remain at Fort Shafter, Hawaii.

NEW AMEDDPAS SOFTWARE PERMITS LOGMARS USE

The Army Health Care Systems Support Activity at Fort Sam Houston, Texas, has developed new software that enables activities using the Army Medical Department property accounting system (AMEDDPAS) to employ logistics applications of marking and reading

symbols (LOGMARS) technology.

AMEDDPAS provides automated property management for Army Medical Department and many nonmedical table of distribution and allowances activities. Many AMEDDPAS users have had difficulty in using LOGMARS because of problems with the data collection device into which the LOGMARS scanner plugs. Many activities have actually found it more convenient to perform manual inventories rather than deal with the data collection device.

The new software—actually a module of AMEDDPAS—allows the user to plug the LOGMARS scanner into a computer terminal loaded with AMEDDPAS, thus bypassing the data collection device. Inventory data are loaded directly into the computer and electronically transferred to a regional data center for processing.

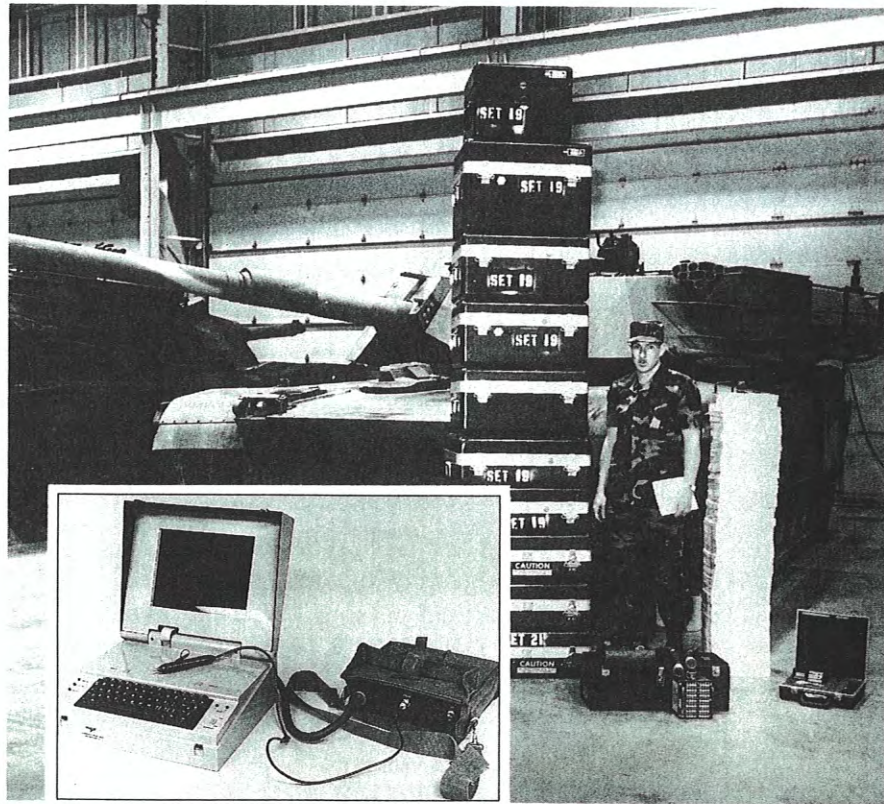
Last October, AMEDDPAS users began receiving the new software, along with a coaxial cable that connects the scanner to a computer. For more information on using LOGMARS with AMEDDPAS, call George Cook or Bill Smith at AUTOVON 471-7107 or commercial (512) 221-7107.

PAPERLESS MANUALS COMING

The mounds of paper now required to support diagnostic testing, maintenance, and repair of the Army's major weapon systems will soon be converted to software that can be used with a small computer.

The Army Communications-Electronics Command is producing electronic technical manuals for the M1 main battle tank and the all-source analysis system, a new military intelligence system. The Army Training and Doctrine Command is modifying regulations to require electronic technical manuals for all new major weapon systems.

Computer support may come from a new device that was developed for another purpose. A 35-pound portable maintenance aid that can diagnose equipment failures could be adapted to display repair instructions and other information from the electronic manuals. This option is scheduled for field testing in fiscal year 1991 in West Germany and at Fort Hood, Texas.



□ These stacks of technical manuals and testing equipment that are now used to troubleshoot malfunctions in the M1 tank may be replaced by computer software and the portable maintenance aid shown in the inset.

ALOG **EMPHASIS**

(Continued from page 1)

BERETTA WINS AGAIN

Beretta U.S.A. will continue to produce the Army's standard sidearm, the M9. In a recent rematch mandated by Congress, Beretta's 9-millimeter pistol again outperformed those produced by Smith and Wesson and Sturm, Ruger, and Company. As a result, the Department of Defense has exercised an option in the existing contract with Beretta for production of 57,000 additional pistols at a cost of \$9.9 million. Beretta won the original \$57.8-million contract in 1984 after competing with four other manufacturers. The competitors contested the outcome and sought Congressional support for a rematch.

LOG COLONELS GET STARS

Ten of the 46 Army colonels recently nominated for promotion to brigadier general are from logistics branches. They are Colonels Harvey E. Brown, Ray E. McCoy, William R. Holmes, and James W. Monroe of the Ordnance Corps; Frank F. Henderson, Robert K. Guest, and John J. Cusick of the Quartermaster Corps; Walter L. Busbee and George E. Friel of the Chemical Corps; and George A. Landis of the Transportation Corps.

AR 30-1 REVISED

AR 30-1, The Army Food Service Program, has been revised. The regulation covers operational and administrative procedures for Active Army and Reserve component dining facilities. The revision describes energy conservation programs, duties of food service personnel, special food allowances, inventory and accountability procedures, and the signature headcount system. The revised regulation redefines special subsistence situations and implements the use of food service management plans to ensure that modern food service facilities are provided at all installations.

MOBILIZATION STUDIES LISTED

A bibliography of studies and models on mobilization planning is available to authorized persons. Write to—DLSIE, ALMC, Fort Lee, VA 23801-6043, or call AUTOVON 687-4655 or commercial (804) 734-4655.

JOINT CHIEFS REVISE TERMS

The Joint Chiefs of Staff (JCS) have determined that the term "Organization of the Joint Chiefs of Staff" will no longer be used. The term "Joint Chiefs of Staff" will be used to refer to the corporate body comprising the chairman and the chiefs of the services. "Joint Staff" will refer to the chairman's staff. JCS Publication 1-02 has been revised to reflect this change.

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