Department of the Army Historical Summary

Fiscal Year 1978

CENTER OF MILITARY HISTORY
UNITED STATES ARMY
WASHINGTON, D.C., 1980

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UNITED STATES ARMY
WASHINGTON, D.C., 1980

Library of Congress Catalog Card 75–647561

ISSN 0092–7880

For sale by the Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

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DEPARTMENT OF THE ARMY HISTORICAL SUMMARY

Fiscal Year 1978

1. Introduction

As charged by law, the Army's mission is to protect American interests and support American policies in both war and peace. To fulfill its peacetime role, in recent years the strategy has been to deter war through readiness for war. In fiscal year 1978 the Army's principal effort was honing its readiness to a keener edge.

Readiness became the Army's watchword because it has become essential to be able to react to threats with unprecedented speed. The greatest threat confronting the Army today is the Soviet-led Warsaw Pact forces in Europe, long a region of vital interest to the United States. Pact forces have been steadily strengthened and modernized, and their deployment has given them the ability to attack the NATO coalition with little or no warning.

Readiness for European operations, then, was the Army's first priority. At the same time, since American interests were global and potential threats existed elsewhere, such as in the Middle East, the Persian Gulf, and Northeast Asia, the Army had to be prepared to deploy forces wherever needed without delay.

Of course the Army has always been concerned with readiness. But readiness has usually been measured in terms of the ability of a unit to accomplish its mission in light of its members, equipment, and training. This year the Army placed particular emphasis on force readiness, a more inclusive and complex measure which applies to the total Army, to the Army National Guard and the Army Reserve as well as the active Army. To focus attention on force readiness, the term was officially defined as "the readiness of the Army as measured by its ability to man, equip, and train its forces and to mobilize, deploy, and sustain them as required to accomplish assigned missions." Force readiness thus encompasses all factors of the Army's ability to go to war.

The Army's efforts to improve force readiness during the year were hindered by tight money allocations and rising costs. Indeed, in the acquisition, development, and use of resources, prudence was required to ensure that the most compelling needs would be met.

To meet its central need, for people, the Army's task was three-fold: to recruit the required number of soldiers, to attract men and women with the right qualities, and to nurture their commitment to service. The Army also had to maintain an

adequate body of trained and dedicated civilian employees. Four years of filling the ranks with volunteers had proved the all-volunteer concept a success for the active Army, if a qualified one, but not for the reserve components. New and greater incentives were thus developed to bring the reserves up to strength and retain recruits.

To ease personnel shortages, the Army offered women more spaces and an expanded role. To foster commitment among its members, particularly among the lower ranks, the Army gave considerable attention to improving the quality of service life. Leadership practices received careful review to ensure they met the needs not only of Army operations but also of individuals, for a soldier's dedication depends as much or more on proper leadership as on such tangible benefits as pay and housing.

To improve materiel readiness, Army Chief of Staff General Bernard W. Rogers set three priorities: near-term readiness, mid-term modernization, and long-term sustainability. The first means getting better products into the field quickly by improving existing hardware, as in the case of the M60A3 tank. Mid-term modernization is a five-year plan to deploy many systems that began development earlier in this decade. It also involves improving the ability of NATO forces to fight as a coalition by working toward common weapons, equipment, procedures, and doctrine. Long-term sustainability means retaining a responsive industrial base by upholding production planning agreements with private industry and by maintaining the Army's investment in government-owned production facilities.

As the largest user of strategic lift, the Army tried to reduce shortcomings in the system for deploying and sustaining forces. It supported Navy and Air Force programs to increase their respective sealift and airlift capacities. It took steps to fill and add sets of unit equipment prepositioned in Europe so only the personnel and minor equipment of deploying units would have to be airlifted for rapid theater reinforcement.

It was essential that the Army maintain a qualitative edge over potential adversaries by adapting modern technology to military needs. Technological advances had to be applied to designs for new equipment, with a parallel modernization of organization and doctrine.

Finally, management practices had to be improved. For only through sound management can the Army use its money, people, equipment, and time most efficiently.

The following summary is the Army's record of work in these and other areas in fiscal year 1978.

2. Operational Forces

As part of the larger effort to improve force readiness, the Army refined the combat ability of the twenty-four divisions of its basic operational force. The Army stressed raising American readiness for European operations and developing compatibility and uniformity among NATO forces to improve their effectiveness as a coalition. The Army also took measures to adjust its footing in the Pacific and, on the domestic front, to meet its statutory responsibility for assisting civilian authorities.

Organization and Deployment

Designed to maximize the combat power of available resources, the Army's total force structure combined active and reserve component units. The basic force comprised eight divisions in the National Guard and sixteen divisions in the active Army. Four of the latter were rounded out to their full complement of units by the affiliation of a National Guard brigade with each for training and mobilization. Nine National Guard battalions, two Army Reserve battalions, and one Army Reserve company rounded out six other active Army divisions. A National Guard brigade was affiliated with each of four fully organized divisions; two National Guard battalions augmented another.

A further application of the affiliation process was expanded during the year. Reserve component battalions were associated with active units to improve their deployment readiness. This close relationship of reserve and active forces allowed the Army to maintain its basic 24-division configuration, including most of the necessary tactical support and sustaining support base, while remaining under an authorized active Army strength ceiling of 787,000.

The National Guard units in the basic force included five infantry divisions, one mechanized infantry division, and two armored divisions. Among the active Army units were five infantry divisions, five mechanized infantry divisions, four armored divisions, one airborne division, and one air assault division. To promote readiness for European operations, two infantry divisions in the active Army were scheduled to be reorganized as mechanized infantry units.

Other operational forces in the National Guard included seventeen brigades, eight of which were infantry, six mechanized

ORGANIZATION AND DEPLOYMENT OF MAJOR ACTIVE ARMY UNITS

30 September 1978

U.S. Stationing				Forward Deployment	
Active Army Unit	Location	Roundout Unit	Augmentation Unit	Active Army Unit	Location
1st Infantry Division (Mechanized)	Fort Riley, Kansas	2d Battalion (Mechanized), 136th Infantry ARNG, Minnesota	69th Infantry Brigade (Mechanized) ARNG, Kansas	2d Infantry Division	Korea
4th Infantry Division (Mechanized)	Fort Carson, Colorado	3d Battalion (Mechanized), 117th Infantry ARNG, Tennessee	67th Infantry Brigade (Mechanized) ARNG, Nebraska	3d Infantry Division (Mechanized)	Germany
5th Infantry Division (Mechanized)	Fort Polk, Louisiana	256th Infantry Brigade (Mechanized) ARNG, Louisiana		8th Infantry Division (Mechanized)	Germany
7th Infantry Division	Fort Ord, California	41st Infantry Brigade ARNG, Oregon		1st Armored Division	Germany
		8th Battalion, 40th Armor USAR		3d Armored Division	Germany
		Co D (Bridge) 13th Engineer Battalion USAR		*Berlin Brigade	Berlin
				**3d Brigade, 1st Infantry Division (Mechanized)	Germany
				***Brigade 75	Germany
				4th Brigade, 4th Infantry Division (Mechanized) (Brigade 76)	Germany
9th Infantry Division	Fort Lewis, Washington	1st Battalion, 803d Armor ARNG, Washington	81st Infantry Brigade (Mechanized) ARNG, Washington	193d Infantry Brigade	Canal Zone
24th Infantry Division	Fort Stewart, Georgia	48th Infantry Brigade (Mechanized) ARNG, Georgia		2d Armored Cavalry Regiment	Germany
25th Infantry Division	Schofield Barracks, Hawaii	29th Infantry Brigade ARNG, Hawaii		11th Armored Cavalry Regiment	Germany
		100th Battalion, 442d Infantry USAR			

82d Airborne Division	Fort Bragg, North Carolina		1st Battalion (Airborne), 143d Infantry ARNG, Texas 2d Battalion (Airborne), 143d Infantry ARNG, Texas 39th Infantry Brigade ARNG, Arkansas
101st Airborne Division (Airmobile)	Fort Campbell, Kentucky		
1st Cavalry Division (Armored)	Fort Hood, Texas	1st Battalion, 263d Armor ARNG, South Carolina 2d Battalion, 252d Armor ARNG, North Carolina 2d Battalion (Mechanized), 120th Infantry ARNG, North Carolina	
2d Armored Division	Fort Hood, Texas	1st Battalion, 123d Armor ARNG, Kentucky 2d Battalion, 123d Armor ARNG, Kentucky 1st Battalion, 149th Infantry ARNG, Kentucky	
6th Cavalry Brigade (Air Combat)	Fort Hood, Texas		
172d Infantry Brigade	Fort Richardson, Alaska		
194th Armored Brigade	Fort Knox, Kentucky		
197th Infantry Brigade	Fort Benning, Georgia		
3d Armored Cavalry Regiment	Fort Bliss, Texas		

*Special Mission Unit stationed in Berlin as part of the tripartite occupation force.

**Officially referred to as 1st Infantry Division Forward.

***Except for Headquarters and Headquarters Company and Support Battalion, units of brigade are furnished on six-month rotational cycle by 2d Armored Division and 1st Cavalry Division.

infantry, and three armored, and four regiments of armored cavalry. The Army Reserve had an infantry brigade, a light infantry brigade, and a mechanized infantry brigade. Additional active Army formations included six brigades, four of infantry, one of armor, and one of air cavalry, and three armored cavalry regiments.

Over a quarter of the Army's major active units—four divisions, a brigade from each of three other divisions, one separate brigade, and two regiments—were posted in the Federal Republic of Germany. One division was in Korea, although plans called for its eventual withdrawal, and one brigade was in the Panama Canal Zone. The remaining units were in the United States, including a division in Hawaii and a brigade in Alaska, on call for deployment wherever required. As evidenced by the array of units in Germany, Europe was the area of primary American interest.

Unit Readiness

Factors weighed in determining the ability of an Army unit to perform its mission include manpower, equipment, training, leadership, and morale. In search of a more comprehensive and accurate assessment, toward the end of this year the Army revised its system of measuring these factors. Standards were raised for satisfactory ratings in such areas as the availability of senior noncommissioned and commissioned officers, equipment on hand, and equipment serviceability. The overall rating of a unit was restricted to one no higher than the rating for its principal weapons system, such as tanks or howitzers. A new feature measured additional aspects of training, such as the availability of qualified instructors, training areas, and facilities. Also new was a provision for a composite rating of a major unit (division, brigade, and armored cavalry regiment) by grouping its subordinate elements into fire, maneuver, and support categories. These elements are individually rated. The major unit's overall rating cannot exceed the lowest individual rating awarded.

This year satisfactory personnel strength levels were maintained by all active Army units stationed in the United States, although shortages in some skills and grades occurred as manpower was drawn from them to sustain the strength of units deployed overseas, particularly in Germany. As a command, the forces in Europe somewhat exceeded their authorized personnel strength. The logistic readiness of all active Army units remained virtually unchanged from last year's level. The percen-

tage of units possessing or exceeding authorized quantities of equipment remained at 95 percent, and the percentage reaching or surpassing goals for serviceable gear stood at 83 percent.

Together these readiness yardsticks reveal that all units deployed overseas were able to carry out their combat missions. Those in the United States were also combat ready, except for the three most recently activated divisions and one recently reorganized brigade. The three new divisions needed more personnel and equipment.

Europe

The motivating force behind Army policy was recognition of the magnitude and sophistication of the Warsaw Pact forces. Battle with them would reach an unparalleled pace and intensity, demanding more of our combat and support systems than ever before. Preparing for such an engagement is a long-range goal, but during the past year much was accomplished.

To improve the effectiveness of NATO forces, the Army concentrated on the areas known collectively as NATO rationalization/standardization/interoperability (RSI). Simply stated, rationalization is making the best use of defense resources from an alliance standpoint; standardization is uniformity; and interoperability is compatibility in doctrine, equipment, systems, and procedures.

Much of the Army's RSI effort during the year centered on command, control, and communications; ammunition and weapons, especially artillery; target acquisition systems; logistics systems; and tactical doctrine. Progress in reaching bilateral and multilateral agreements in these areas was substantial. From the Army's point of view, the most beneficial RSI efforts were in ammunition interoperability, standardized artillery, and interoperable logistics systems.

Other significant steps taken this year in NATO defense planning stemmed from a 1977 meeting of heads of state in London. There President Carter suggested preparing a long-term program to enhance NATO's defense capabilities, and a short-term program to redress the most critical defense deficiencies.

Short-term advances were subsequently recommended to correct as quickly as possible critical deficiencies in antiarmor capability, war reserve munitions, and reinforcement. In pursuit of this objective, the Army introduced a number of measures. In the antiarmor area, it planned to deploy a TOW-equipped aviation company to Europe and to equip designated reinforcement

units in the United States with the Dragon antitank missile. War reserve munitions were to be expanded, including TOW and Dragon holdings, and the amount of various supplies stored in Europe was to be increased. Earmarking additional forces as reinforcement units also received study. Under earlier plans, a dozen eight-inch howitzers with crews, vehicles, and other equipment—the equivalent of a battalion—were moved to Germany between January and March. To further raise the density of heavy artillery, the equivalents of two battalions of 155-mm. howitzers will follow in fiscal year 1979.

To accelerate the reinforcement of units in Germany, the Army maintains what it calls prepositioned materiel configured to unit sets. Under this method, most of a reinforcing unit's equipment is stored as a set within a possible combat theater so that only the unit's personnel and some minor equipment need airlifting to provide rapid reinforcement. As of the end of this year, equipment stored in battalion- and company-size sets at eight sites in Germany was sufficient to support the rapid deployment of three reinforcing divisions. Plans call for the prepositioning of sets for three additional divisions; one by the end of fiscal year 1980, the others by the end of fiscal year 1982.

Another short-term proposition was to increase the manning of some units in Germany. This year the Army raised its overall strength in Europe to 207,000, an increase of 4,300. In a step related to raising the permanent manning of the Army's NATO contingent, two signal companies began deployment to Europe during the last month of this fiscal year. These two units will provide signal support to Brigade 75, whose troops this year were for the most part provided in temporary-duty status on a six-month rotational cycle by the 2d Armored Division and 1st Cavalry Division. Beginning next year, the brigade will be manned by troops on regular tours of duty; when this change has been completed and the unit has occupied its permanent station, Brigade 75 will be designated the 3d Brigade, 2d Armored Division (Forward). Now stationed in central Germany, where U.S. forces have long been concentrated, the brigade will be permanently located near Bremerhaven in the primarily British sector to the north. This move will provide tangible evidence of American interest in defending the northern region.

The NATO Long-Term Defense Plan was ratified by heads of state during a NATO summit meeting in Washington at the end of May. It committed its signatories to a fifteen-year program to improve NATO defenses. Each nation agreed to a yearly three percent real-dollar increase in defense spending.

The Army played a major role in developing the areas of action. They include: readiness; reinforcement; reserve mobilization; maritime posture; air defense; command, control, and communications; electronic warfare; rationalization; consumer logistics; and theater nuclear forces. During the year the nations worked on plans for carrying out the program. A progress report is scheduled for issue early in fiscal year 1979.

Host nation support has been important to Army operations in Europe for some time. This is a program for negotiating agreements with NATO allies for providing supplies and services, primarily to help the Army meet rear-area requirements. A stumbling block to completing agreements has been the objections of allied governments to U.S. procurement regulations requiring contracts for purchases using appropriated funds; these governments consider the requirement inappropriate to dealings with sovereign nations. Last year the Army proposed remedial legislation that was included in the Department of Defense legislative program for the 95th Congress. Since the legislation remained pending before Congress this year, the Office of the Secretary of Defense granted the Army blanket permission to deviate from the requirement. The Army made major progress in obtaining host nation support.

REFORGER 78, the tenth annual strategic mobility exercise, provided some up-to-date measurements of U.S. and NATO operational readiness. The deployment of equipment and troops from the United States by sea and air tested strategic lift and rapid reinforcement; host nation support played a large role; and the placement of American units under Netherlands command during a field exercise shed light on some aspects of NATO interoperability. REFORGER results were satisfactory all around.

The Pacific and Far East

To improve its position in the Pacific, the Army proposed reestablishing Headquarters, U.S. Army Pacific (discontinued in 1974) as the Army component of the unified Pacific Command. The nucleus of the headquarters would be shaped by combining the U.S. Army CINCPAC Support Group and selected elements of the U.S. Army Support Command Hawaii. The Army believed that restoring the headquarters would ease the transition from peace to war, should the need arise. At the close of the year the recommendation lay before Secretary of the Army Clifford L. Alexander. Ultimate approval rests with the Secretary of Defense.

The Army's major Far Eastern concern was the withdrawal of Army forces from Korea. In 1977 President Carter ordered the withdrawal to take place gradually over a five-year span. It was to include the entire 2d Infantry Division and all other Eighth Army forces except for a small residual group of logistics, intelligence, communications, and command personnel. Subject to congressional approval, the units would leave behind equipment to strengthen and modernize South Korean forces at no cost to the South Koreans.

The Army's original plan called for the withdrawal in 1978 of a brigade of the 2d Division and several Eighth Army units, totaling about 6,000 personnel spaces. In the midst of alleged Korean influence-buying in the United States, however, Congress did not authorize the transfer of equipment to the Republic of Korea Army until autumn, and the withdrawal was delayed. Under a new timetable, only 3,400 personnel spaces, including one battalion of the 2d Division, would be withdrawn by the end of calendar year 1978.

In 1977 American and South Korean officials agreed to establish a Combined Forces Command before the end of the first phase of the withdrawal. The commander in chief was to be American; the deputy commander was to be South Korean.

In light of U.S. withdrawal, the new headquarters would symbolize American commitment to the defense of the Republic of Korea. Ground was broken for the headquarters building of the new command in May. The command itself was scheduled for activation early in the next fiscal year.

In the United States, the forthcoming return of the 2d Division raised the matter of where it would be stationed. Locations studied for environmental impact during the year were Fort Bliss, Texas, Fort Benning, Georgia, Fort Devens, Massachusetts, Fort Dix, New Jersey, and Fort Drum, New York. Fort Riley, Kansas, was selected as the temporary station for the battalion leading the withdrawal, with Fort Lewis, Washington, as the alternative. Its permanent home should be chosen in fiscal year 1979.

Western Hemisphere

On 7 September 1977 President Carter and the Republic of Panama's chief of government, Brig. Gen. Omar Torrijos, signed treaties providing for the dissolution of the canal zone, new operating and defense arrangements, and ensuring the neutrality of the canal and American accessibility to it. The Senate ratified the treaties on 18 April of this year. The Army

began planning the necessary changes. Plans centered on arranging financial and manpower resources, drafting a legislative package, and developing workable command relationships between the supervisory bodies that will function during the life of the treaties.

The Army paid closest attention to plans for command relations between the two bodies that will supervise U.S.-Panamanian defense operations. Draft legislation proposed new laws and amendments to carry out the treaty provisions. It defined the scope and authority of the administrator of the new Panama Canal Commission, modified the canal zone code, and authorized required payments to Panama. Requests for resources were included in a Department of Defense budget amendment for fiscal year 1979.

The Office of Management and Budget approved the amendment but did not send it to Congress. This delay left the Army without funds for the construction it needed to accomplish during Panama's dry season so that unit relocations dictated by the treaties could be made with minimal disruption of operations. The Army thus requested $10.9 million from the contingency fund of the Secretary of Defense to start the most critical construction. At year's end action on this request awaited presidential certification of need.

Chemical and Nuclear Matters

U.S.-Soviet Bilateral Negotiations on Chemical Weapons Arms Limitations begun in 1976 reconvened in three sessions this fiscal year. Army staff members represented both the Office of the Secretary of Defense and the Joint Chiefs of Staff at these meetings. The U.S. goal is to negotiate the framework of an agreement that would bring an effective and verifiable halt to the development, production, and stockpiling of chemical weapons and provide for the destruction of chemical munitions. Further negotiations will reveal whether the Soviets desire the same result.

Since the Warsaw Pact forces have a well-developed capacity for chemical warfare, the Army activated eleven chemical defense units during the year—five decontamination detachments and six reconnaissance detachments. These and additional detachments to be activated next year will be assigned to the larger formations in Germany. Those assigned to divisions and corps support commands will be enlarged to company size. The Army also allocated $53.2 million for purchasing chemical protective clothing and other field defense equipment. It should be avail-

able by fiscal year 1982. Another $32.6 million was allocated to research and development for improving defensive gear.

In its own arsenals of offensive chemical munitions, the Army continued programs for tightening physical security at storage sites, selling excess material with industrial uses, and destroying obsolete items. In addition, new procedures for destroying obsolete munitions were developed, installed and tested.

The Army conducted a cleanup operation on Enewetak, an atoll in the Marshall Islands in the central Pacific where the United States had tested nuclear devices, including the hydrogen bomb, between 1947 and 1958. In December 1947 its entire population of 136 had been relocated. In 1972 the U.S. agreed to make the atoll again inhabitable. The operation consisted of removing contaminated soil and debris to another part of the atoll where it was enclosed in concrete.

The Defense Nuclear Agency was responsible for the joint service effort; the Army provided the bulk of the forces. Army engineers cleared the atoll proper and Navy forces cleared the beaches below the high-water mark. Air Force field radiation support teams monitored radiation levels of the material, and the Department of Energy provided on-site radiation surveys and assay services. Despite delays caused by tropical storms, all phases of the operation were on or ahead of schedule at year's end.

To improve its tactical nuclear weapons and increase its capacity for a flexible battlefield response, particularly in Europe, during each of the past two years the Army asked Congress for funds to develop a new 155-mm. nuclear projectile. Congress denied the request both times and last year directed a joint Department of Defense–Department of Energy reassessment of the need for the projectile and for an eight-inch nuclear projectile under development since fiscal year 1975.

The Department of the Army and the Energy Research and Development Agency presented the report early this year. It justified the new projectile on grounds that it would quadruple the number of American artillery pieces with a nuclear capability facing Warsaw Pact forces and provide a tactical nuclear capability to other NATO forces having only or predominantly 155-mm. artillery in their force structures. In light of these advantages, Congress provided the funds.

Late last year a public controversy was generated by press reports that the Army was developing a new generation of nuclear weapons, called "neutron bombs" in the reports, that

would kill people and spare buildings and other property. These weapons were actually under development in the early 1960's, but were kept under security wraps until an unclassified reference appeared in the Congressional Record during the 1978 budget hearings. The weapons grew out of the Army's need to stop a massed tank or armored vehicle attack without causing unnecessary collateral damage and casualties to nonmilitary structures and personnel. The new device, which the Army named a "reduced blast/enhanced radiation" weapon to counter the "neutron bomb" label, met this requirement. Compared to a standard fission weapon, its reduced heat and blast characteristics would decrease the range of collateral damage by five to ten kilometers.

Opponents of the new weapon believed that its reduced collateral damage quality increased the likelihood of its use in battle, thus increasing the probability of nuclear warfare. The Army took an opposing position: because the new device was more usable and effective, it would deter nuclear conflict. Nevertheless the public controversy, which extended around the world and was especially intense in Europe, led to an amendment of the 1978 appropriations bill. President Carter had to certify that the weapon was in the national interest before money could be spent on its production. In response to public pressure, the President directed the Department of Defense to continue modernizing nuclear weapons leaving open the option of installing the enhanced radiation elements. In deferring a final decision, the President hoped to encourage the Soviets to show reciprocal restraint.

Nuclear testing was also subject to controversy. During the previous year some cases of leukemia were detected among former Army members who had taken part in a nuclear weapons test in Nevada twenty years earlier. This year the Army conducted a records search to identify all Army participants in that test. A similar but broader search under the Defense Nuclear Agency to locate records and compile data for all Army participants in all nuclear tests was still in progress at the end of the year.

Military Support to Civilian Authorities

The Army responded to more than 900 Secret Service requests for explosive ordnance disposal personnel, aircraft and crews, vehicles and drivers, and medical service. Highlighting this support, the Army provided a mobile air traffic control radar team for airspace surveillance over Camp David in Thur-

mont, Maryland, during the momentous Middle East peace talks between President Carter, Egyptian President Anwar Sadat, and Israeli Prime Minister Menachem Begin.

Requests from the Customs Service and the Drug Enforcement Administration for support of federal efforts to reduce illegal drug traffic involved the loan of ground sensors, trucks, aircraft, and weapons; the use of Army training facilities; and the extension of maintenance service. The value of such equipment and services exceeded $6 million.

To augment emergency medical transportation services until similar civilian services are available, Army helicopter ambulance units continued participating in the Military Assistance to Safety and Traffic program (MAST). This program makes military helicopters, crews, paramedical personnel, and equipment available for medical emergencies in the civilian community. Two restrictions on MAST support are that it not interfere with military missions in areas where medical and rescue helicopter units are regularly assigned and that it not compete with similar commercial operations.

Only active Army and Army Reserve units took part in the program until this year, when Army National Guard units were permitted to take part on a voluntary basis during periods, usually weekends, coinciding with scheduled training. The activation of two medical rescue units, one Army Reserve and one Air Force Reserve, raised the number of MAST units to twenty-five (nineteen Army and six Air Force). These units transported over 3,000 patients.

Fires, floods, and storms created a substantial workload for the Army in disaster relief operations. Foreign missions included a relief effort in Honduras during Hurricane Greta. In the United States, Army personnel and equipment helped fight a forest fire in Colorado and a fire threatening the national oil reserve in Louisiana.

Floods caused extensive damage in the western and north central sections of the country. For the second consecutive year, widespread flooding in the Pacific Northwest during the early winter months did especially heavy damage to flood control works in the state of Washington. Losses of flood control facilities also occurred in southern California because of heavy rains in February and March. In the spring, flooding from melting snow, storms, and ice jams severely damaged levees in Nebraska, North Dakota, and Minnesota. Repairs by Army engineers to the control facilities in the Pacific Northwest and California alone cost almost $10 million.

Problems created by severe winter storms in the midwestern and northeastern states required the largest commitment of men and equipment and involved forces of the Army National Guard and Army Reserve as well as the active Army. In round-the-clock operations over several days, Army task forces cleared roads of snow and stalled vehicles, hauled fuel and other supplies to shut-in areas, and evacuated stranded motorists, isolated families, and medical patients. In the strongest test of the disaster relief program in recent years, the Army provided assistance in sixteen major domestic emergencies.

3. Force Development, Doctrine, and Training

As with all military organizations past or present, in fiscal year 1978 the readiness of the U.S. Army's operational forces was the product of their organization, composition, and training. Maintaining the readiness to deter major aggression and lesser threats to peace and our national interests was an unremitting task. It involved not only the operational forces but all elements of the total Army. Staff members at all levels devoted much attention to force development and training, two of the most important ingredients of force readiness.

Force Development

Force development is continually influenced by other dynamic factors. In 1978 the Army adjusted to shifts in our national strategy, the rapid pace of technological developments in weaponry and equipment, budgetary constraints stemming from rampant inflation, and the goal of balanced forces capable of both deterrence and instant response to various contingencies. While the Army's overall structure remained the same, a 24-division force comprised of sixteen active and eight National Guard divisions, significant changes occurred in units making up that force and its supporting elements.

The Army has devised a management approach called force packaging methodology to ensure that planning, programing, and budgeting actions are responsive to Army priorities and that available resources are allocated to best promote force readiness. The force packaging methodology aligned all Army forces, active, guard, and reserve into separate force packages, one for each of four mission priorities announced by the Chief of Staff in June 1977. The priorities were as follows:

1. Those forces and supplies essential to the first thirty days of any European war and those forces and supplies needed for any unilateral contingency elsewhere, including support base functions.
2. Those forces and supplies needed for the second month of a European war.
3. Those forces and supplies needed for the third month of a European war.
4. The minimum needs for the remainder of the Army.

Resources were being distributed accordingly, with the result that improved near-term readiness was often achieved at the expense of later deploying units. Resource constraints made it necessary for the Army to meet its most pressing needs first, redressing inequities through longer-range fiscal actions.

As in the previous year, the Army tried to combine active and reserve components with civilian support in a balanced force that maximized the combat potential of available resources. The trend to increased reliance on reserve components continued. In 1978 they provided 54 percent of the Army's land combat forces, 57 percent of its special forces groups, 65 percent of its combat engineer battalions, and 65 percent of its tactical support units. They also continued providing combat units to round out and augment active divisions.

The Army took steps to add combat strength to its forces which would be available as quickly as possible, fulfill its commitments to NATO, and increase the units that could be deployed in non-NATO situations.

To improve its status in Europe, the Army raised manpower authorizations, deployed an eight-inch field artillery battalion, planned for deploying other artillery sections, added more missile firing Cobra gunships, and continued prepositioning the equipment of units that would be flown from the continental United States. It made plans to increase manpower in Europe in 1979 to improve electronic warfare, chemical defense communications, and missile maintenance capabilities. The Army also provided a 5 percent manning increase to selected combat elements in the United States scheduled for deployment to Europe in the event of a conflict.

Outside Europe, the Army increased from 90 to 100 percent of wartime requirements the manpower of the 5th and 24th Infantry Divisions and the 194th Armored Brigade. It planned in 1979 to finish converting the 24th Infantry Division to mechanized infantry, activate in the United States two tank battalions, one Hawk missile battalion, one Vulcan air defense artillery battery, one field artillery battalion, and one attack helicopter battalion (-) to increase the structure of the 6th Cavalry Brigade (Air Combat). In addition, it planned to convert the first returning battalion of the 2d Infantry Division to mechanized infantry.

During fiscal year 1978, the U.S. Army Forces Command (FORSCOM) activated 29 units, inactivated 15, deployed 2, and reorganized 490, all within the active component. Among the units activated were six artillery target acquisition batteries, ten

military intelligence units, and one additional division support chemical unit.

FORSCOM completed deferred parts of the Army Reserve fiscal year 1977 troop-action program and set the 1978 program in motion. As in 1977, however, the program continued experiencing difficulties, such as stationing problems, determining if the reserve could support cellular units, obtaining equipment essential to missions, and overcoming the objections of a number of state adjutants general. Consequently, FORSCOM completed only a part of the program, activating twenty Army Reserve units, inactivating twenty-one, and reorganizing eleven.

In fiscal year 1978 the Army was on the threshold of transition to a new generation of weapons and equipment. Impelled by the Warsaw Pact buildup in Europe, the Army was developing new or improved systems in almost every combat field. In January 1978 the new XMI tank passed a major development roadblock when the Secretary of the Army announced that the German 120-mm. smoothbore tank gun would become its main armament. In June the Department of the Army ordered limited production of the major interim antiarmor vehicle, an improved TOW (tube-launched, optically-tracked, wire-guided) missile system mounted on the M113A1 armored personnel carrier. The XM2 infantry and XM3 cavalry fighting vehicles remained in engineering development.

In artillery, the Army contracted for the development of the multiple launch general support rocket system (GSRS). Keyed to NATO requirements, the GSRS would be used jointly by NATO forces. It approved starting full-scale production of the AN/TPQ–36 mortar locating radar, and completed advanced operational testing of TACFIRE, an improved tactical fire direction system for artillery.

Development progressed on new air defense systems. However, only a new short-range missile, the U.S. Roland-SAM (a U.S.-produced version of the French/German designed Roland II), and the AN/TSQ–73 air defense command control system reached the production stage.

The Army worked on several aircraft systems, including new assault (Black Hawk) and advanced attack (AAH) helicopters, and a modernized medium lift helicopter (CH–47). Only the Black Hawk was scheduled to reach the field in 1980.

Early in 1976 the Army's Training and Doctrine Command (TRADOC) initiated a comprehensive study of the optimum size, mix, and organization of a heavy division for the 1980's. By 1977 TRADOC had devised a plan that would provide more, but

smaller, maneuver battalions, greater artillery firepower, improved electronic warfare and chemical defense capabilities, and a weapons-oriented logistical system.

The innovations TRADOC proposed were field tested in the 1st Cavalry Division at Fort Hood, Texas. From October to December 1977, TRADOC sponsored battalion-level tests of the restructured elements. Those were followed by tests of a restructured brigade-size organization and subordinate units, employment of alternative tank battalion organizations, a 96-hour live-fire exercise of a direct support field artillery battalion, and a comprehensive field test of the restructured brigade. The field tests were completed on 30 September 1978. The Combined Arms Center at Fort Leavenworth, Kansas, conducted numerous war game evaluations of the test concepts, including analysis using a computer assisted division war game.

The results of both the field tests and war games will be analyzed, compared with similar evaluations for current H-series organizations, and used to develop a new heavy division. Designated Division 86, its initial structure should be ready to present to the Chief of Staff early in fiscal year 1980.

TRADOC also studied the airborne division. This year it made recommendations for some restructuring of that organization. For example, TRADOC proposed expanding the firepower of the division, adding to that of its infantry and 105-mm. howitzer battalions, giving the latter 155-mm. pieces for use in Europe, and increasing the number of attack helicopters.

A large, modern military organization operating with the most technologically advanced weapons faces extremely complex problems. Accurate information on which to base decisions must be readily available. In recent years, the Army has begun developing a number of management and information systems to supply the data base needed for planning and carrying out the almost continuous restructuring of its organization.

In fiscal year 1978, budget constraints measurably slowed the progress of placing new systems into full operation. For example, the vertical force development management information system (VFDMIS), which was described in detail in the 1977 Department of the Army Historical Summary, received no new funds in 1978. VFDMIS was designed primarily for wartime, but has a capability of functioning with equal efficiency in peacetime. It incorporates centralized, structural programing techniques hitherto not attempted in a system of its magnitude. Work continued on previously funded communications support requirements and selection of technical software for teleprocessing.

Steps were taken to revise the VFDMIS communications plan to permit consideration of the use in the system of standard remote terminals and AUTODIN II, the advanced automatic data digital network. The VFDMIS development team, reconstituted in fiscal year 1978 as a result of a manpower survey of the U.S. Army Computer Systems Command, established a program to train new personnel in the centralized design and structural programing to be employed in the system.

Development of the Force Development Integrated Management System (FORDIMS) also fell behind schedule because of personnel shortages and a shift of priorities. Accordingly, the Army extended its completion date to September 1979. Progress in 1978 toward this goal included completion of users guides for some of the subsystems and of training and implementation plans.

In anticipation of the completion of VFDMIS and FORDIMS, the Office of the Deputy Chief of Staff for Operations and Plans (ODCSOPS) made preparations for using the two systems in conjunction with its Structure and Composition System (SACS). ODCSOPS had established SACS for stating personnel and equipment requirements to appropriate Army agencies for use in developing budgets for personnel accession, training and distribution, equipment acquisition and distribution, and related activities. To expedite the output of SACS and increase the timeliness and accuracy of its data, ODCSOPS arranged a contract with General Research Corporation to ascertain how SACS might use VFDMIS and FORDIMS.

The wartime requirements for ammunition, materiel, and personnel (WARRAMP) study program seemed likely to produce data pertinent to VFDMIS and related Army information systems. In 1978 phase two of the study, methodology development, was completed. A start was made on system testing and an experimental production run. After this is accomplished, work will begin on producing consumption and loss factors for use in programing the Army's requirements.

The recent proliferation of systems relating to the Army's development and acquisition process, all with the goal of force modernization, has caused concern that planning and programing for placing new systems into operation might be inadequate. One obstacle faced by the major Army commands responsible for programing new systems was the lack of data upon which to base budget estimates. To overcome this handicap, the Department of the Army issued a supplement to the Preliminary Army Planning and Programing Guidance Manual

with information on support planning and programing for forty-two new systems. The supplement was further evidence of the Army's widening awareness of the need for special management for effective use of the many new systems the Army would be producing in the 1980's.

Concepts and Doctrine

As a signatory to the Geneva Conventions of 1949, the U.S. had participated in diplomatic conference negotiations during 1971–77 to consider new protocols. The conference adopted protocols on international and civil wars. Consistent with the Army's interest in whether the United States should become a party to the new protocols and what reservations or understanding might be required, in late 1977 the Army staff and the Judge Advocate General's Office (JAGO) carried out substantial studies on them, including a detailed review and analysis prepared by JAGO. Following these studies, the Department of the Army concurred in the decision to sign the protocols, which the United States did on 12 December 1977.

During fiscal year 1978 JAGO began writing a new law-of-war manual to incorporate the new protocols. The Army undertook studies to determine future training requirements relative to the protocols and changes that might be advisable in standard Army procedures. The Army continued coordinating with NATO how the protocols could best be implemented in NATO, such as by common manuals, rules of engagement, and standardization agreements. At the end of the fiscal year the Department of the Army was engaged in detailed studies on the feasibility of the new protocols in combat conditions and in preparing for U.S. Senate hearings on their ratification.

Although the 1977 conference had discussed restrictions on specific weapons, none were adopted in the new protocols. During the conference many nations had expressed the desire for negotiations to continue on prohibiting or restricting specific conventional weapons, including land mines, incendiaries, and small caliber projectiles. Accordingly, the conference recommended that the United Nations convene a separate diplomatic conference on weapons that might be excessively injurious or have indiscriminate effects. The United Nations issued a call for this conference in 1979 and held a preparatory conference in August and September 1978. Representatives of the Army's Deputy Chief of Staff for Operations and Plans, Deputy Chief of Staff for Research, Development, and Acquisition, Surgeon General, and Judge Advocate General were members of the U.S.

delegation to the preparatory conference. The United Nations scheduled a second preparatory conference for the spring of 1979 to consider concrete treaty proposals.

To meet a responsibility assigned by the Department of Defense, in fiscal year 1978 the Judge Advocate General's office continued reviewing conventional weapons to determine if they were consistent with international law. An Army regulation on the legal review of weapons was approved. It had been prepared by the Army staff to make JAG's review process more efficient and to ensure a timely review of new conventional weapons systems.

Concern with weaponry development was an important element in Army planning for future wars. TRADOC developed the battlefield development plan to give direction and focus to Army development efforts in the areas of materiel, training, force structuring, concepts and doctrine. TRADOC will revise and expand the plan annually. The first edition will be published in November 1978 and contain four chapters: a description of the impact of technological advance on the Army; a net assessment comparing the Army's program to achieve near-term readiness and mid-term modernization with Soviet force capabilities; an analysis of the ability of development programs to meet battlefield demands in the 1980's; and a set of conclusions and recommendations.

TRADOC undertook other studies pertinent to the battlefield of the future. It began a study of engineer tasks that would most contribute to force effectiveness. The Engineer Family of Systems Study, a draft report distributed this year, designated three principal mission areas: mobility, countermobility, and survivability. It investigated obscuring of battlefields with smoke clouds created by various types of ammunition as an aspect of the effect of the environment on combat operations. From these studies it provided appropriate agencies with basic data for developing performance models and battlefield scenarios incorporating smoke and dust.

Battlefield automation came under study from several different directions. The Vice Chief of Staff directed TRADOC's battlefield automation management program (BAMP), which already had responsibility for identifying, validating, and approving requirements for battlefield automation systems, to also manage development of these systems to control the proliferation of computers on the battlefield. BAMP's critical review resulted in termination of two systems and recommendations to terminate or modify others. TRADOC's automated battlefield

interface concept moved forward in developing requirements for systems interoperability. If approved by the Department of the Army, its evaluation of forty-nine systems likely to be functioning on the corps battlefield in the early 1980's will become the Army's first major interoperability requirements document.

The Army's command and control system of the 1980's will be expected to conform to the Army command and control master plan (ACCMP), which continued under development. With contractor support from the Federal Systems Division of International Business Machines Corporation (IBM), in June 1978 the Army completed work on the theater nuclear level of conflict phase of the ACCMP. Also completed were architectural guidance and solutions and scenario documents for other levels of conflict, such as conventional war, general nuclear war–post attack, and crisis situations. In August work began on a pilot master plan to be published in October.

Responding to a TRADOC study which revealed a significant gap in existing and potential capabilities of U.S. tank forces, the Chief of Staff formed the Tank Forces Management Group in August 1976. The group recommended and the Chief of Staff approved the establishment of the Tank Forces Management Office, which since August 1977 has been providing intensive management of the Army's tank forces in the areas of personnel, training, logistics, and development and coordinating an integrated tank program. In fiscal year 1978, TFMO's Special Tank Task Force (STTF), set up at the direction of the Chief of Staff, completed a review of the tank program and formulated an integrated research, development, and procurement plan. The STTF plan will be the basis for a significant shift in future tank budgetary requests. Many specific actions recommended by the plan were assigned to appropriate staff agencies. The Office, Deputy Chief of Staff for Logistics, for example, completed eight of its ten assigned tasks in fiscal year 1978 and estimated that it would complete the remaining two by the end of fiscal year 1979.

Training and Schooling

In fiscal year 1978 the Army continued emphasizing training as its most important peacetime activity. In the summer of 1978 the Chief of Staff approved a significant administrative change at the Department of the Army level for the management of training. A direct result of the Army Resource Management Study (1977–78), this change transferred the Training Division, Office, Deputy Chief of Staff for Personnel, to the Office, Deputy Chief

of Staff for Operations and Plans, effective 1 October 1978. Consolidating training functions at this level should ease the determination of training requirements from individual entry through major units and open the way to trade-offs between individual and collective training in this unit.

In keeping with the total Army concept, training guidelines were the same for both active and reserve component forces. The guidelines set as the primary training task improving the ability of units to conduct and support sustained land combat operations. Four basic goals received special attention: accelerating the development and use of junior leaders; ensuring productive use of each soldier's full training day; improving individual proficiency in the tasks set forth in the relevant soldier's manual; and improving unit proficiency in the tasks set forth in the relevant unit Army training and evaluation program. Emphasis continued on decentralizing training management, which was to be achieved by having all individual commanders use a four-step training management model: set objectives, provide resources, coach subordinates, and measure results.

In combat training the Army stressed the need for a sound balance between individual and collective training. It also stressed training under realistic conditions. Simulated sustained combat operations were employed, as were activities to improve the use of smoke and nuclear, biological, and chemical skills. There was an increase in the use of Opposing Forces personnel, tactics, and materiel, and of intelligence training.

Specialized training contributed to a balance between individual and unit training. Under the small unit exchange program the active Army had exchanges with Australia, Canada, New Zealand, and the United Kingdom. There was on-the-job and observer training of 156 individuals from twenty-two foreign countries. FORSCOM units increased their use of U.S. Navy amphibious facilities on both the east and west coasts, attended the three-week jungle orientation course conducted by the U.S. Army Jungle Warfare Training Center at Fort Amador, Canal Zone, and received arctic orientation training at the U.S. Army Northern Warfare Training Center, in Fort Greely, Alaska. Individual soldiers benefited from efforts to revitalize marksmanship training and competition.

Participating in twenty-six exercises under the Joint Chiefs of Staff exercise program during fiscal year 1978, the Army gained training experience in mobility, command and control, communications, and other areas under likely wartime conditions. The largest exercise was REFORGER 78, which has been held

annually since 1967 under a trilateral agreement among the United States, the United Kingdom, and the Federal Republic of Germany. Beginning in August, elements of the 4th, 5th, and 9th Infantry Divisions, an attack helicopter battalion of the 101st Airborne Division, and other combat and service support units deployed by land, sea, and air to Europe. Units of the 4th Infantry Division came under operational control of the 1st Netherlands Corps for field training exercises designed to provide them with experience in NATO interoperability. Fifth Division units and supporting elements joined in a U.S. V Corps field training exercise. Concurrently, tactical operations center groups from 1st and 9th Infantry Division Headquarters took part in a command post exercise conducted by the U.S. VII Corps in Germany. A unique feature of this year's REFORGER was a no-notice exercise in which an artillery battalion was alerted to deploy to Europe within ninety-six hours, fall in on its prepositioned equipment, participate in a field training exercise, turn in its equipment, and redeploy back to the United States, all within ninety-six hours. The exercise was judged successful in every respect. In the Far East, TEAM SPIRIT 78 was a successful strategic deployment exercise in reinforcing U.S. defenses in South Korea.

As the fiscal year ended the Army prepared for Exercise NIFTY NUGGET/MOBEX 78, the most comprehensive mobilization and deployment command post exercise conducted by the United States since World War II. The Army's portion was to run from 10 October to 8 November.

Army training was affected by the expanded development of the Opposing Forces (OPFOR) program. FORSCOM included OPFOR concepts in the division combined arms training cycles and the United States Army, Europe, began organizing an OPFOR training detachment. Both FORSCOM and TRADOC included OPFOR concepts in all training documents relating to skill qualification tests and Army training and evaluation programs. TRADOC began a series of OPFOR manuals. The first, FM 30–102, OPFOR Europe, was issued, and another on North Korea was in progress.

While REFORGER and similar large-scale activities provided some realistic combined arms training, many other units were denied comparable experiences because of a lack of facilities. Such training requires a simulated battlefield environment, which employs appropriate size enemy forces, live-fire, close air support, and the most sophisticated electronic equipment, under conditions that may be adequately evaluated. To overcome this

training deficiency, FORSCOM and TRADOC collaborated on plans for establishing a national training center (NTC). The plans were completed in December 1977, approved by FORSCOM and TRADOC commanders and the Vice Chief of Staff of the Army, and submitted for funding in the fiscal year 1980 budget. In September 1978 the Army filed a draft environmental impact statement with the Environmental Protection Agency proposing three alternative sites for the center: Fort Irwin, California, which the Army favored, Twenty-Nine Palms Marine Corps Base, California, or Yuma Proving Grounds, Arizona.

A number of new training concepts tested and validated by TRADOC were introduced into the regular training program. In January 1977 the Department of the Army had approved basic initial entry training. It provided a basic training course for women trainees that was essentially the same as the one men had been receiving for many years. Women were to undergo more strenuous physical activities and receive training in individual tactical techniques, hand grenade qualification, and the use of weapons. Courses began in September 1977 with all-female units at Fort McClellan, Alabama. In fiscal year 1978, men and women trained together under this program at Fort Jackson, South Carolina. TRADOC made preparations to train women at Fort Dix, New Jersey, and Fort Leonard Wood, Missouri, and men at Fort McClellan.

Other new training concepts introduced into regular training were the Basic Noncommissioned Officer Course for Combat Arms, and record testing for the first group of enlisted personnel management system career fields. Skill qualification testing was extended to the reserve components later in the year.

Since fiscal year 1976 the Army has been working on a one-station unit training concept, in which initial entry training is conducted at one installation in one unit with the same cadre and one program of instruction. Basic and advanced individual training are integrated to permit early instruction in specific military occupational specialties. Reinforcement training follows to assure mastery.

If one-station training was as or more effective than the traditional two-station method, then time and money could be saved by adopting it. Following TRADOC's test of one-station training in 1976, Congress accepted the Army's conclusion that the length of initial entry training could be reduced. However, due to objections from congressmen and the General Accounting Office, it directed the Army to conduct another test compar-

ing one- and two-station training to determine which is more advantageous and economical for initial entry infantry training. During fiscal year 1978 TRADOC devised such a test. It is to be carried out at Fort Benning, Georgia, and Fort Knox, Kentucky, and is designed to compare cadre qualifications, program execution, facilities, and the handling of trainees. Training began at Fort Benning in August 1978, and is scheduled for completion in time to submit the results to Congress by the summer of 1979.

In 1976 the Special Commission of the United States Military Academy convened to assess honor code violations. This commission suggested the formation of the West Point Study Group, which in 1977 submitted a report containing more than 200 recommendations. In October 1977 the superintendent of the academy appointed eleven committees to consider the study group's report. They covered the areas of curriculum, governance, staff and faculty development, honor review, scheduling, computer management and training support, cadet quality development and commitment, ethics and professionalism, instructional methods and technology, faculty council, and the library committee. At the close of the fiscal year, more than 70 percent of the group's recommendations, modified in some instances, were in effect, while most of the others remained under study.

One noteworthy change under way this year was the transition to a new curriculum emphasizing academic excellence and reducing the number of required courses. It is hoped this will enable cadets to better utilize their time and energy. Other changes under review would upgrade the comprehensive and diversified character of the cadet experience, while reaffirming traditional values.

In 1978 the Army took another step towards revising its system for educating and training officers. In June the officer training and review group in the Office of the Chief of Staff completed a study begun in August 1977. Entitled Review of Education and Training for Officers, the study proposed fundamental changes designed to meet the criticism that the present system failed to provide officers with adequate technical competence. Earlier TRADOC had made a detailed study of the 1973 Israeli-Egyptian war, in which both sides had employed modern weapons. The study resulted in revision of the curricula in Army schools to include more technical training. These revisions, however, had not produced military leaders distinctly superior to those of America's potential adversaries.

The June 1978 study recommended a series of changes encompassing all of the education and training needs of the officer.

It extended from precommissioning through career completion, covering both the active and reserve components, and was adaptable to periods of rapidly expanding forces. Some of the recommendations were instituting accession screening for all officer candidates; establishing military qualification standards which would provide every young officer through his first ten years of service with an unambiguous guide to self-development, unit development, commander responsibility, and institutional learning; reshaping the officer's advanced course; establishing a new Combined Arms and Services Staff School at Fort Leavenworth, Kansas, to ensure that all officers selected for the rank of major receive the required staff training; reducing attendance at the Command and General Staff College regular course to 20 percent of the officers selected for the rank of major; providing precommand courses for all commanders regardless of their component or speciality; developing at the Army War College, Carlisle Barracks, Pennsylvania, war game simulation capabilities for instruction in warfare involving joint, combined, and coalition forces; and providing for the continuing education of general officers, particularly when they move from one position to another.

The highest level Army school for noncommissioned officers, the U.S. Sergeants Major Academy at Fort Bliss near El Paso, Texas, changed its procedures for selecting and assigning students. Scheduled to go into effect with the fiscal year 1980 selection board, the changes were made to improve management of selection and assignment and to adjust to new limitations on permanent changes of station imposed by the Department of Defense in late 1977. Under the new system, the board will name from among eligible master and first sergeants 400 as primaries to attend the school and 400 as alternates. Twice as many alternates as in the past will be named, thereby ensuring an adequate number to replace primaries who cannot attend because they are ineligible for a permanent change of station. The changes will ensure that noncommissioned officers who must postpone their attendance will have an opportunity to attend at a later date.

Some more specialized areas of Army education also underwent change. The foreign area officers program, which is designed for officers assigned to attaché, security assistance, psychological operations, unconventional warfare, civil military operations, and civil affairs positions, reduced training time abroad to twelve months. The only exceptions were students scheduled to attend a command and general staff college in a

host country or the State Department's Foreign Service Institute Language School. These students will train for eighteen months to permit travel and area orientation. In addition, Russian area specialty trainees will spend twenty-four months at the U.S. Army Institute for Advanced Russian and East European Studies in Garmisch, Germany.

The foreign language training program underwent a thorough review and revision. The revised Army linguist program, which became effective on 1 September 1978, established an Army language review committee, provided a procedure for setting up linguistic requirements, emphasized the role of the commander in maintaining the linguistic proficiency of his command, required an assessment of language capability in statements of unit operational readiness, and increased the role of the Army continuing education system in refresher and maintenance training. The Army contributed to a revision of the regulations governing the Defense language program, published in July 1978, and will participate in the new foreign language training development five-year plan, approved by the Office of the Secretary of Defense in September.

In July 1978 the Department of the Army approved TRADOC's substantial revision of the command refresher course program for colonels and lieutenant colonels selected to command infantry, armor, field artillery, air defense artillery, and engineer commands. Divided into six parts, the program included self-study at the officer's home station, a branch refresher phase, command development and battle captains segments to be taken at Fort Leavenworth, and language study and legal orientation for selected officers.

The Office of the Surgeon General and the Army Medical Department effected changes in health education and training. In an effort to comply with the Chief of Staff's actions to reduce the Army staff, effective 1 April 1978 the Surgeon General consolidated the two divisions involved in staff functions for health education and training. To overcome the perennial critical shortage of Army medical officers, the Medical Department expanded its graduate medical education program, increasing from 1,190 to 1,450 the number of physicians in internship, residency, and fellowship training. The Surgeon General sought authority to resume in-service training of physician's assistants, which was discontinued in 1975 for budgetary reasons. The Army Medical Department also strengthened its long-term policy of providing financial support to encourage its members to

maintain their professional competence through continuing education and acquiring professional specialty recognition from national health organizations.

Members of the Judge Advocate General's Corps require extensive specialized training to perform with professional competence. With this objective sixty-one corps officers completed courses of instruction at the following in-service institutions during fiscal year 1978: U.S. Army War College (2); U.S. Industrial College of the Armed Forces (1); U.S. Army Command and General Staff College (9); Armed Forces Staff College (1); and the Judge Advocate General's School graduate course (48).

Faced with dwindling resources, the Army tried to increase the efficiency of its training. The training management control system was designed to provide data on training costs and to identify the type and scope of training consistent with available resources in terms of battalion field training days for a division. Testing of this system began in the spring of 1978 at Fort Stewart, Georgia, with the 24th Infantry Division, and was expected to conclude late in fiscal year 1979.

More efficient use of an essential training resource was also the purpose of the Army's training ammunition management system. In December 1977 the Department of the Army published interim directions and procedures for this system. In March the Training Ammunition Authorization Committee validated ammunition requirements, and these were incorporated into fiscal years 1980–84 budget requests. Programs and reports to support ammunition management requirements and authorizations moved forward.

Improvements were made in the Army training requirements and resources system, which transmitted and received data on virtually every aspect of Army training and schooling. In the fiscal year, the system expanded to include the Office of the Surgeon General, the Academy of Health Sciences, the U.S. Army Transportation School, the Reserve Components Personnel and Administrative Center, the U.S. Army Military Personnel Center, and Headquarters, Forces Command. It now covers the majority of Army formal school training activities. The system also broadened its data base to include student input and graduates, attrition, class schedule changes, and a projection of the number and types of students scheduled for training at any given time.

The Army Study Program

In fiscal year 1978 the Army study program, which continued under the Management Directorate in the Office of the

Director of the Army Staff, consisted of 321 studies. Over 80 percent were conducted by Army organizations; the rest by nongovernment study groups and consultants. Sixty-eight of the completed studies related to the eleven priority problem areas identified in the fiscal year 1978 SA/CSA Study Planning Guidance document and listed in the 1977 Department of the Army Historical Summary. For example, several of the fourteen studies conducted under the Office of the Deputy Chief of Staff for Personnel concerned recruiting and personnel management models.

In July 1978 the Under Secretary of the Army directed the Army staff to review Army study and analysis activities. The Office of the Deputy Chief of Staff for Operations and Plans served as executive agent for the ad hoc study group, which was chaired by the Deputy Under Secretary for Operations Research. The review addressed selecting problems for study, improving the quality of study results, efficient use of resources and procedures, integrating study programs, and providing them with guidance and control. The study was scheduled to be finished in late October. Staffing with major Army commands and Headquarters, Department of the Army, will then follow.

4. Intelligence, Automation, and Communications

Whether at peace or at war, collecting and disseminating information are prime functions of a military organization. Knowledge of the capabilities of potential foes, the location and strength of their forces, is essential to the defense of the nation and its allies. As the Secretary of the Army and the Chief of Staff declared: "No segment of our forces can function effectively in isolation." During the past fiscal year the Army improved its methods of accumulating intelligence data, especially at the tactical level, and made its already sophisticated communications channels more dependable and secure. As might be expected, advanced electronic equipment and computer systems played a major role.

Intelligence

Much of the Army's energies were devoted to preparing for the next crisis. It was a time for experimentation, for testing new concepts and equipment. Since the main responsibility for strategic intelligence was shifted to the Defense level in recent years, the Army has had to reorganize its intelligence establishment. Efforts in this direction continued this past year.

Prior to 1976, when some Intelligence Organization and Stationing Study recommendations were adopted, Army intelligence operations and support were fragmented or vertically controlled. The reorganization placed many tactical intelligence units under the corps commanders; the remainder were either centralized under the new U.S. Army Intelligence and Security Command (INSCOM) or, if they were performing support services, assigned to a functional command.

The shift resulted in a more responsive and economical use of intelligence resources, but it also demonstrated a need for more effective management of the overall system. Accordingly, the Assistant Chief of Staff for Intelligence began work on a master plan for the use of intelligence assets. With the Office of the Secretary of Defense, the Office of Management and Budget, and Congress deeply interested in the subject, the plan must ensure that Army intelligence personnel work toward approved goals in conjunction with other intelligence agencies. It will cover peace and war, short- and long-range prospects, the Army's needs and the ability of other agencies to supply them.

and working out compatible arrangements with other American and foreign intelligence organizations.

In March the Assistant Chief of Staff for Intelligence assumed responsibility for Army participation in the U.S. signals intelligence system. He would henceforth formulate policy, help Army representatives prepare presentations to Congress, coordinate signal intelligence matters with other services, agencies, and nations, and ensure that Army signal intelligence activities are compatible with those of other members of the system, especially the National Security Agency/Central Security Service. In addition, he took over INSCOM's function of developing the basic framework for all future Army signal intelligence.

The Army drafted a five-year management plan for electro-optics intelligence. The plan will develop the potential of this means for collecting information.

In late December the Army and the National Security Agency reached an agreement on their respective responsibilities for tactical signal operations. The integration of Army signal intelligence units into the tactical forces—one of the results of the Intelligence Organization and Stationing Study—made such clarification necessary.

The Army sought to raise the level of its topographic support to field commanders. Standard maps failed to furnish the detail required in modern warfare. Technological advances in mapmaking improved the commander's ability to site weapons, analyze their destructive effects, and locate enemy targets.

The Army was working on a five-year plan to improve topographical support. Set to begin in 1980, the plan was designed to furnish combat-oriented, timely, and reliable direct support to commanders primarily at the corps and division level. It will also provide information on technological advances, new doctrine and force structures, and requirements for acquiring and training personnel.

The Army planned more immediate measures to help major tactical commanders buttress their intelligence capabilities. It has received the first deliveries of hardware and software for a photolocator, which will provide rapid and accurate data on friendly and hostile positions and survey information. Mounted on a 2½-ton truck, the photolocator is an analytical photogrammetric positioning system in an environmentally controlled shelter. Training of personnel to operate it began at Fort Sill and the Aberdeen Proving Ground. Eventually a photolocator will be issued to each division and corps artillery headquarters.

The Army has contracted for six mobile ground interpreta-

tion centers to replace tactical imagery interpretation facilities. Each center will have a computer to aid photo and electronic imagery interpretation and permit quicker and more accurate responses to tactical needs. The first centers will be assigned to Army corps and intelligence schools.

To improve field commanders' meteorological support, the Army experimented with small belt weather observation kits adapted from the ones used by the Department of the Interior to fight forest fires. With the help of the kit, intelligence personnel have collected weather data in overseas trials and forwarded it to Air Weather Service forecasters to increase the accuracy of their weather predictions for battlefield areas. In early 1979 the Army will begin issuing calculators to each artillery ballistic meteorological section. They will cut down the time required for manual plotting of upper air soundings and make meteorological information more responsive to the needs of artillery firing units.

In April an appraisal of tactical intelligence support and interoperability in the NATO area was made in Germany. Senior representatives from Washington and the major commands examined the current threat, the warning system, problems of providing adequate support and working with other NATO intelligence organizations, and other concerns.

One of the major problems affecting intelligence activities was the retention of trained enlisted personnel. Many failed to reenlist because they were frustrated by the lack of opportunity to maintain their skills in a peacetime environment. To cut down such losses, the Army developed a program to maintain signal, human, and imagery intelligence proficiency. INSCOM will be the executive agent and work closely with other major commands. The program will assign intelligence missions to tactical units in the United States and abroad, provide specialized operational training for tactical personnel at various national agencies and organizations, and send selected personnel overseas for training against actual targets.

Initially, major commands were funding these activities and experiencing good returns. If the funds requested for fiscal year 1980 are approved, the Army will expand the program, build a training facility in Europe, increase the number of personnel involved, and bring reserve personnel into the training system. Meanwhile, the major commands sustain present efforts by diverting funds from other programs.

Many of the changes contemplated by the Intelligence Organization and Stationing Study were being carried out. One of

the more far-reaching proposals was developing fully integrated combat electronic warfare and intelligence (CEWI) battalions and groups to support divisions and corps. In April the 504th Military Intelligence Group (Corps) was activated at Fort Hood, Texas, to organize and test CEWI over the next two years. In September the Army also approved the activation of a headquarters and operations company at Fort Bragg similar to the test unit at Fort Hood. It provided command and control of the newly established 525th Military Intelligence Group (Corps Airborne), and was an interim step to the activation of a CEWI group at XVIII Airborne Corps. The Army also approved the final table of organization and equipment for a battalion.

A milestone was passed in developing the Army System for Standard Intelligence Support Terminals (ASSIST). Software was installed at Army and Army-supported intelligence data handling systems worldwide. Project ASSIST was initiated to improve support to intelligence analysts through terminal-oriented, interactive automatic data processing and telecommunications. Software was installed and tested in support of the U.S. European Command analysts' intelligence display and exploitation system. This provided analysts of the U.S. Army, Europe, and U.S. Air Forces in Europe with common software for exchanging data, analyst-to-analyst communications, and full-time access to the European command's central computer.

Upon completion of the Defense Intelligence Agency front-end support system, Intelligence Data Handling System Communications-II/ASSIST modules now installed in Europe will facilitate European and component command access to national data bases via the trans-Atlantic communications circuit.

The Army designated 1 October 1977 as INSCOM organization day. With the merging of most Army strategic intelligence and counterintelligence activities, INSCOM conducted all such operations above corps level. Major INSCOM field units included the 470th Military Intelligence (MI) Group in the canal zone, the 501st MI Group in Korea, the 66th MI Group in Germany, the 902d MI Group at Fort Meade, Maryland, the 500th MI Group in Japan, a detachment in Hawaii, and field stations in Germany, Japan, Korea, Okinawa, and other locations.

On the same date the Army established the U.S. Army Intelligence and Threat Analysis Center (Provisional). Resources for the new organization came from the Intelligence and Threat Analysis Detachment, the INSCOM Intelligence Group, the Imagery Interpretation Center, the Intelligence Operations Sup-

port Detachment, the Intelligence Support Detachment, and the Special Research Division of the Intelligence and Threat Analysis Detachment.

The U.S. Army Security Agency Test and Evaluation Center was transferred to the U.S. Army Materiel Development and Readiness Command (DARCOM) on 1 October 1977. INSCOM's research, development, and acquisition resources were also shifted to DARCOM and became part of a newly designated Signal Warfare Laboratory. The laboratory became a subordinate element of DARCOM's Electronics Research and Development Command and was consolidated at Vint Hill Farms Station, Virginia, during the last quarter. In the process, 114 spaces were relocated from Arlington Hall Station, Virginia.

On 22 January 1978 the U.S. Army Intelligence Systems Support Agency (ISSA), a staff support agency of the Office of the Assistant Chief of Staff for Intelligence (OACSI), was inactivated. Concurrently, the Intelligence Automation Management Office was established within OACSI. With this reorganization, ISSA's automatic data processing and systems development operations were transferred to INSCOM, and the following ISSA functions were transferred to OACSI: intelligence automation, automation security, and the intelligence data handling system's life-cycle management and its program and budget.

The Army was less successful in efforts to consolidate the intelligence schools at Forts Huachuca, Arizona, and Devens, Massachusetts. Although no immediate action was in the offing, it remained a long-range objective.

Congress asked the Army for a combined budget request for intelligence support to tactical commanders. The Army assigned this task to the Deputy Chief of Staff for Operations and Plans. The budget request covered procuring and developing equipment, organizing and training units and personnel, and evolving tactical intelligence doctrine and concepts of operation.

Military and civilian personnel security clearance was scheduled to come under the Military Personnel Center in mid-1978. But the final transfer of this function from INSCOM was deferred to 1 January 1979. Meanwhile, INSCOM would continue to support the program by conducting interviews using personnel resources assigned to the 902d MI Group.

INSCOM retained responsibility for collateral clearances and for guarding access to sensitive information. The Central Personnel Security Clearance Facility became operational at Fort Meade on 1 October 1977. By the end of the fiscal year it was the

sole authority in the Army for granting, denying, or revoking collateral clearance and access to sensitive information.

In June the President took a major step toward liberalizing public access to classified documents when he issued Executive Order 12065. As of 1 December 1978, documents would be automatically declassified in twenty rather than thirty years. The Secretary of the Army could approve specific exceptions. In addition, the executive order eliminated the ten-year requirement before an individual could ask for review of a document for declassification. Under the new regulations, reviews might be requested at any time.

The government retained responsibility for safeguarding classified information. A representative from the Office of the Assistant Chief of Staff for Intelligence was a member of a team that conducted a security systems survey in the United States and Europe of present methods of protecting classified military data. Results were positive.

In retrospect, the reorganization of intelligence activities initiated in 1976 emphasizing centralization and improvement of Army tactical intelligence support continued dominating the intelligence area. Barring unforeseen developments, such will be the case in the years to come.

Automation and Communications

Intelligence, automation, and communications are interrelated. Intelligence must be passed on to decision makers in a timely and accurate manner. The Army continued its efforts to improve the organization, effectiveness, and modernization of automation and communications systems. Programs often span five or ten years, and progress in a given year might seem small because of the time required to develop, test, and introduce new systems. The following account presents the highlights of the 1978 fiscal year.

For some time it has been apparent that automation and communications technologies and applications were converging. A 1977 study of Army management of command, control, communications, and computers led to a staff conference in March 1978 that produced three major recommendations: the management of automation and communications should be consolidated at the headquarters of the Department of the Army; the management of command and control functions should remain under the Deputy Chief of Staff for Operations and Plans; and a

new Assistant Chief of Staff for Automation and Communications should be established on 1 October 1978.

After further study and revision, the recommendations were approved by the Chief of Staff and the Secretary of the Army during the spring. The new Assistant Chief of Staff for Automation and Communications would manage policy, planning, programing, budget functions, and the integration of automation and communications systems. The U.S. Army Management Systems Support Agency, the U.S. Army Computer System Selection and Acquisition Agency, the U.S. Army Computer Systems Command, and the Joint Interface Test Force would be under the new assistant chief of staff. The Deputy Chief of Staff for Operations and Plans would have a strong role in validating automation and communications requirements. The Office of the Deputy Chief of Staff for Research, Development, and Acquisition would handle the development of tactical computer systems supporting management information systems.

The Army split the management of the frequency spectrum between the staff and the major commands. As of 1 March, the staff would limit itself to matters essential to overall control of Army spectrum management; the majority of the responsibilities would be delegated to the major commands. For instance, TRADOC would be in charge of spectrum management requirements for all combat developments, doctrine, and concepts, while the Army Materiel Development and Readiness Command would be responsible for research, development, and acquisition of equipment which used or affected the spectrum.

There was considerable progress in consolidating the Pentagon telecommunications centers operated by the services and the Joint Chiefs of Staff. In January the Air Force and Army activities were combined in the Army center. The success of this effort led the Navy to agree to a triservice staff service center under the Army. The Joint Chiefs of Staff have consented to participate under similar arrangements. If no unexpected delays are encountered, the consolidation will be completed by April 1981, a year earlier than anticipated.

Special intelligence and ground service telecommunications centers were being colocated at forty-five sites throughout the world. Five consolidations were completed and plans for thirty-eight others were well under way. When the program is finished, a hundred military spaces and $2 million annually will be saved.

Interoperability has become a key word in recent years, both at joint and combined levels. Incompatible systems impair command and control, especially by the tactical commander. During

the year the Army worked closely with other services and agencies on the joint interoperability of tactical command and control system (JINTACCS). Testing was scheduled to begin in the summer of 1979. The Army and the other organizations began to reach agreement on the systems and units that would take part in the exercises.

The Army and the Marines have completed a memorandum of understanding on a method for producing an automated interface of their fire support systems. Since members of NATO expressed interest, the program might be broadened to include NATO requirements.

Ever since 1971, when the joint tactical communications program began developing equipment for the 1980's, the Army has been an active participant. Under the program, the Office of the Secretary of Defense gave the Army responsibility for seven components: a modular traffic terminal; the AN/TTC–39 automatic switch; a family of digital group multiplexers; a superhigh frequency satellite that would permit a channel to be time-shared; mobile subscriber equipment; items to promote the compatibility of radio nets; and short-range wide-band radios.

In December study was completed on the modular traffic terminal. The result was two basic configurations for developing a single subscriber terminal and a module-tactical communications terminal. Draft specifications were written. Difficulties with the contractor over the costs of the automatic switches—the circuit switch (AN/TTC–39) and the message switch (AN/TYC–39)—were worked out. The contractor resolved the most difficult technical challenges. The software package for the circuit switch was designed and tested. A training message switch was installed at the Signal School at Fort Gordon, Georgia, and operational testing of the switch began at Fort Huachuca in mid-1978.

Engineering development of the digital group multiplexers proceeded on schedule, and contractor development tests were finished during the year. The superhigh frequency satellite was eliminated from the program and turned over to the Satellite Communications Agency for further development. The Secretary of the Army helped coordinate the shift and arrange the transfer of funds.

In accordance with last year's request, the Vice Chief of Staff approved the designation of mobile subscriber equipment as a major program. A special task force formed in February was working on requirements for appointing a program manager.

The Army began engineering development of a basic net

radio interface analog device in April. The device will permit subscribers using wire lines to communicate through a switchboard to radio subscribers.

The short-range, wide-band radio program had two parts: developing a new radio, and modifying the Army GRC–144 radio and TRC–138. In April the second part of the program was transferred from the Air Force to the Army. Its aim is to permit transmitting wide-band traffic from the switching node directly to the radio park area, thus eliminating the need for cable connections. Full-scale engineering development began in August.

Another joint program in which the Army was involved was the tactical information distribution system. Its goal was to establish a loop system with air, ship, and ground terminals; terminals connected to the network would receive tactical information on a selective basis according to the users' needs. The Army's primary responsibility would be the ground terminals, and studies have been completed by five contractors. The studies will also be useful for the integrated tactical communication system and in developing advanced systems for data distribution.

As stated in previous reports, the integrated tactical communication system is an all-digital system designed to be reliable, compatible, and reasonably inexpensive. It will be introduced into the Army inventory over the next decade. A steering committee was formed in fiscal year 1977 to oversee the transition.

Last year's report discussed the procedure evolved by the U.S. Army Signal School in which the proponents for a functional system identify their communication requirements in terms of the parties needing to communicate, and the number, classification, priorities, and purposes of the exchanges. That information has now been stored in a computer and is available to communications planners. Since the data was subject to frequent changes as doctrine was developed, systems were introduced, or previous deficiencies were identified, the computer bank had to be updated continuously. Many of the communications support requirements identified during 1978 led to significant alterations in the 1976 list of requirements for the integrated tactical communication system.

The Army base information transfer system underwent further testing this year. The system is a compatible network of computers, telephones, teletype, video, and facsimile equipment, with terminals connected by a broadband distribution system using coaxial cables. The Mitre Corporation, architect of the system, completed the overall design and distribution cable plant

at the Aberdeen Proving Ground. At the second installation designated as a test facility, the Walter Reed Army Medical Center in Washington, the corporation installed all cables in the new hospital building and demonstrated a computer system which handled patient records. Eight terminals and about twenty-five television receivers were connected to the cables. The system was used for television surveillance and to show videotaped staff meetings to hospital personnel.

On the military satellite communications front, the last of eighteen large, Defense Satellite Communications System fixed station AN/FSC–78 terminals became operational in September. Twenty-three digital communication subsystems were shipped to sites around the world, bringing the total of installed subsystems to thirty. The six strategic multichannel AN/TSC–86 superhigh frequency transportable terminals approved during the preceding fiscal year will begin entering the inventory in late 1979. Operations and maintenance was assigned to the Army.

At the end of December the Army awarded one contract for twenty-one 38-foot antennas and another for the concomitant equipment for a new series of strategic, medium-size terminals (AN/GSC–39). Initial delivery was scheduled for mid-1982. As the fiscal year ended the Army also signed a contract for a fixed station antijamming system that would cover the entire frequency spectrum and permit Defense satellite communications terminals to continue operations if the enemy employed jamming techniques.

The Defense satellite communications system had three operating satellites in orbit. One was over the Atlantic, a second was over the Indian Ocean, and the third covered the western Pacific. Two satellites were launched during the fiscal year, but one failed to function properly; as a consequence, a NATO satellite was used to satisfy communications demands over the eastern Pacific until additional satellites could be launched.

Testing proceeded on the lightweight manpack terminal for ground soldiers that would permit linkage with tactical satellites. A production contract for 205 terminals was projected for fiscal year 1979. Additional progress was reported on the combat net radios which will replace those currently in use at the division level. The Army let three contracts during the year for prototypes and will select the best candidate for engineering development. The Army was investigating the possibility of adopting a minicomputer to help the field soldier deal with the complex communications systems of the future.

The development of AUTODIN II, an advanced automatic

digital network, encountered scheduling difficulties during the year. The system will be a leased general purpose data communications network offering precedence and security protection to high-level users, and including command and control and compartmented intelligence systems. It was originally scheduled to go into operation in January 1979 using three packet switching nodes and a network control center in the continental United States and eventually expanding to eight nodes. The system had a target date of December 1979.

For several years the Army has been considering overhauling and modernizing the telephone system in Europe supporting U.S. forces. A number of proposals were evaluated for purchasing or leasing a replacement system from the Deutsches Bundespost. After review of U.S. cost estimates, the Secretary of the Army concluded that modernization would cost $93 million, and that the U.S. should purchase the system from the Deutsches Bundespost if its bid were in line with that estimate. Work involved replacing 112 switches of World War II vintage with solid state digital switches, and using American telephones and key systems. A decision by the German agency not to raise tariff rates for circuits was a contributing factor to the Army decision.

In assessing communications developments during the fiscal year, the main themes were managing assets in the most effective manner, improving quality and reliability, especially of support to tactical commanders, and consolidating facilities and services.

Last year's report spoke of a severe crisis in managing the Army's data processing resources. This year the Director of Automation continued reviewing proposals for new projects to determine which resources could be curtailed, deferred, or eliminated without impairing the Army's combat readiness. In the future such reviews will be conducted through normal evaluation procedures under the Army automation planning, programing, and evaluation system established in 1976 to integrate the Army's automation objectives with the planning, programming, and budgeting system. This year's efforts focused on developing fiscal years 1981–85 automation budgets.

The first Go-to-War Automation Appraisal, described last year, sought to determine how effectively the Army's automatic data processing systems supported combat missions. The appraisal found that many systems could not handle wartime workloads. Another review at Fort Hood, Texas, the second tactical automation appraisal, examined tactical command and control systems, intelligence systems, and supporting communications

networks. In March a Go-to-War II Automation Appraisal dealt with developing systems in the personnel, financial management, and logistics areas.

Last year's reviews confirmed the need for a basic battlefield automation management program and for centralized control over tactical data processing systems and supporting networks. This year the third in a series of battlefield automation appraisals was conducted at Fort Gordon, Georgia, on developing an orderly, effective battlefield automation management plan.

Installation of a standard automated military construction progress reporting system at the field operating agency level was completed in all Engineer military construction divisions, except Huntsville, Alabama. There were seventeen such agencies operating around the world, including Europe, Japan, and Korea.

Automated Systems Security, AR 380–380, was published and carried out this year. The new regulation requires commanders to conduct an in-depth analysis of the security controls within their data processing activities, and formally certify that these controls are adequate to protect the information and the automated system. Reports from the major commands indicate that AR 380–380 has been a valuable tool in safeguarding sensitive information in automated systems.

During the year three Engineer reports were consolidated with the new construction progress reporting system: the Corps of Engineers performance measurement system, the annual forecast of construction contract awards, and the monthly status of construction contract awards.

5. Personnel

Readiness to meet any threat to the nation's security is the primary mission of the U.S. Army in peacetime. The single most important factor in readiness, often overlooked or taken for granted in discussions of sophisticated equipment and weapons systems, is people. Ultimately the readiness of the entire force depends on the individual soldier. But the soldiers in the active Army must be backed up by the reserve components and the civilian work force, for all three elements are essential. In fiscal year 1978 the Army had over 1,700,000 personnel—men and women, military and civilian, active and reserve—serving in the United States and its territories and in eighty-nine foreign countries. Manpower costs totaled $20 billion, or 62 percent of the Army's budget.

In the continuing debate over the volunteer concept, this year criticism often centered on the high cost of manpower. The General Accounting Office, for example, estimated that converting the draft system to the all-volunteer force had already cost American taxpayers more than $18 billion. Defense and Army spokesmen protested that this estimate was unfair, since it included $14 billion for higher pay and allowances for junior enlisted personnel and junior officers, which were necessary to raise their very low standard of living and not related to the adoption of the volunteer force. Furthermore, they pointed out that Congress had acknowledged the principle of pay comparability between the military services and the private sector before the draft ended.

According to Department of Defense officials, a return to the draft would save about $500 million a year through substantial cuts in recruiting resources, advertising, and enlistment bonuses. Larger savings could be achieved only if the military services reduced pay for junior enlisted personnel to the minimum wage, thereby shifting the economic burden of defense from the taxpayers back to those who would be drafted. In his annual report to Congress, Secretary of Defense Harold Brown stated, "While $500 million is a large sum, it clearly is not a major portion of the cost of manpower. We do not believe that the American people would favor a return to the draft to achieve a dollar saving that represents less than one half of one percent of the total Defense budget."

Military Strength

As the budget was formulated for fiscal year 1978, the authorized end strength of the active Army was revised several times from a high of 790,000 in the Army Program Objective Memorandum to a congressionally approved strength of 787,000. When it appeared that Congress would establish a ceiling of 771,700 for fiscal year 1979, the Army further reduced the year-end strength to 774,200 to be more in line with next year.

Actual military strength decreased from 781,763 on 30 September 1977 to a low of 762,701 in May 1978. By the end of the fiscal year it had increased to 771,138, or 98.0 percent of the figure authorized by Congress and 99.6 percent of the adjusted Army goal.

On 30 September 1978 the breakdown of active Army strength was as follows:

	Authorized by Congress	Revised by the Army	Actual Strength
Officers	98,345	96,788	97,301
Enlisted personnel	684,355	673,112	669,513
USMA Cadets	4,300	4,300	4,324
Total	787,000	774,200	771,138

Although the Army failed to reach its authorized end strength, it met established levels of unit manning. The Army also managed its strength better than before and was able to minimize over- and undermanning extremes.

Enlisted Personnel

In order to maintain an effective enlisted force, the Army must attract and retain sufficient numbers of highly qualified and committed volunteers who are ready, willing, and able to meet any challenge. Unfortunately, attrition rates for young men during their first term of military service have increased markedly during fiscal years 1974–76. One-fourth of those who enlisted during fiscal year 1971 left the Army without completing three years of service; fiscal year 1974 male recruits had an attrition rate of 40 percent.

Part of the high attrition rates can be attributed to special programs adopted during the volunteer era to identify and discharge undisciplined and unproductive soldiers as early as possible, since early separations cost less and are less disruptive. The Army, however, shared the general concern over recent attrition trends and took a number of actions to reduce first term

attrition. These included: improving management techniques, such as matching a soldier's assignment more closely to his training, aptitude, and interests; improving leadership and training; supporting efforts to raise the quality of life for soldiers in general and particularly for junior enlisted personnel; and, most important of all, selecting more recruits who were high school graduates and in the upper mental categories. As a result, attrition rates began declining during fiscal year 1977 and continued declining during fiscal year 1978.

Last year the Office of the Deputy Chief of Staff for Personnel conducted a study to determine reliable methods of predicting attrition and identifying individuals likely to complete their initial tour of duty. The most significant finding was that the higher the educational level of a recruit, the more likely he was to fulfill his enlistment obligation. The first term attrition rate for high school graduates was about half that of nongraduates. Within the same educational level, losses increased in proportion to decreases in mental aptitude, as measured by the Armed Services Vocational Aptitude Battery. The study also showed that age and sex were significant factors. Recruits under eighteen or over twenty-two years of age tended to leave the Army at a higher rate than those in the eighteen to twenty-two age group. Female attrition during the first thirty-six months of service averaged 10 to 15 percent higher than male attrition for the same educational level and mental group.

This study enabled the Army to develop a more cost-effective recruiting program for fiscal year 1978. Since a high school diploma was the single most reliable predictor of attrition, the Army denied enlistment to certain groups of non-high school graduates, including women, individuals in mental category IV, male seventeen-year olds in mental group IIIB, and men twenty-three years and older or in mental category IIIB who had not completed the eleventh grade. (Mental categories I–IIIA represent the upper half of those tested; individuals in mental group V, the lowest category, are not eligible for military service.) Furthermore, because attrition was the lowest among male high school graduates in the upper mental categories, recruiters concentrated their efforts on enlisting as many of these young men as possible.

Success in retaining larger numbers of soldiers permitted the active Army to set its fiscal year 1978 combined recruiting objective for the enlisted force at 137,000, which was 45,200 less than last year's goal and the lowest annual requirement since the beginning of the volunteer era. Nevertheless, only 134,428 men

and women enlisted, and the 98.1 percent recruiting rate was the lowest in the last five years. Most of the shortage was in the category of young men with no prior military service, as shown in the table below.

Fiscal Year 1978 Recruiting Statistics

	Objective	Achievement	Percent
NPS males (percent of HSDG)	109,300	106,512 (70)	97.4
NPS females (percent of HSDG)	17,600	17,517 (96)	99.5
NPS total (percent of HSDG)	126,900	124,029 (73.7)	97.7
PS personnel	10,100	10,399	103.0
Total	137,000	134,428	98.1

PS: prior service, NPS: nonprior service; HSDG: high school diploma graduates.

Factors contributing to the low recruiting rate included a substantial decrease in national unemployment, which further reduced the propensity of young men to enlist, and the Army's insistence on recruiting a large percentage of high school graduates. Of the males with no prior service recruited this year, 70 percent had high school diplomas, compared to only 56.2 percent in fiscal year 1977, but the number of nonprior service males with diplomas was the lowest since the draft ended. Since 96 percent of female recruits had diplomas, high school graduates represented 73.7 percent of total nonprior service accessions for the year, a new record for the all-volunteer Army.

Last year the proportion of recruits in mental group I–IIIA dropped to 45.7 percent from a high of 57.6 percent achieved in fiscal year 1975. This year 43.3 percent of the men and 100 percent of the women without prior service were in these upper mental categories, for a combined total of 51.3 percent. Another 38.2 percent were in mental group IIIB and only 10.5 percent were in mental group IV, the lowest acceptable category. Blacks made up 33.7 percent of total enlisted accessions for fiscal year 1978, compared to 29.0 percent for the previous year.

For the first time the Army had difficulty recruiting women. The Office of the Secretary of Defense set the goal for the Army of 80,000 enlisted women by the end of fiscal year 1983. This required the active Army to enlist 17,600 women this year, an increase of 18 percent over last year's goal.

In order to use these larger numbers of women more effectively, the Army decided to enlist them in the skills in which they were most needed. This policy in turn required limits on the number of women enlisted in certain traditional female specialties that had attracted many volunteers in the past. Recruiting

results for women were thus consistently below target from January to June 1978, even though resources were diverted from the male to the female recruiting effort. The Secretary of the Army therefore lowered the minimum Armed Forces Women's Selection Test score required for enlistment from 59 to 50. This action had an immediate effect. The Army was able to achieve 99.5 percent of its female recruiting objective for the year and to enlist 2,553 more women than last year.

The Army's recruiting budget was $210.2 million in fiscal year 1978, compared to $193 million in fiscal year 1977. It included $36.3 million in advertising. The cost per accession averaged $1,560 compared to $1,068 per accession in fiscal year 1977.

To encourage high school graduates in the upper mental categories to enlist for four years in critical, hard-to-fill specialties, such as the combat arms and certain highly technical skills, the Army again offered bonuses of up to $2,500. At the end of the fiscal year enlistment bonuses were available in twenty-seven military occupational specialties. The Army also offered reenlistment bonuses in 113 specialties as incentives for qualified soldiers to remain in skills considered unattractive or easily transferred to the civilian job market.

This year the active Army surpassed its reenlistment objectives both for first term and career personnel. There was continued improvement in the quality of reenlistees. The number of individuals requiring waivers decreased once again. The proportion of soldiers reenlisting with high school diplomas or general education development program certificates increased 2.3 percent over the previous year, 28.5 percent over fiscal year 1972. The following table provides a breakdown of this year's reenlistment statistics.

Fiscal Year 1978 Reenlistment Statistics

	Objectives	Achievement	Percent Achieved	Percent of High School Graduates	Percent on Waivers	Percent of Eligibles Reenlisting
First Term	19,693	21,398	108.7	82.0	3.5	—
(Male)	(17,030)	(18,721)	(109.9)	—	—	(31.6)
(Female)	(2,663)	(2,677)	(100.5)	—	—	(40.7)
Career	50,187	52,425	104.5	97.9	4.6	—
Male	(48,268)	(50,584)	(104.8)	—	—	(67.7)
Female	(1,919)	(1,841)	(95.9)	—	—	(48.0)
Total	69,880	73,823	105.6	93.3	4.2	—

Changes in the 1977 reenlistment program which were discussed in last year's historical summary contributed to this year's impressive reenlistment results. To further increase reenlist-

ments two more changes were made in January 1978. First, the Army reinstated on a test basis an option that had been very popular before it was discontinued in 1975. It guaranteed first term reenlistees another station of their choice within the continental United States, provided a vacancy existed in the appropriate specialty and grade. The Army also established a new program which allowed soldiers in specialties with too many people to extend for formal school retraining in certain skills with personnel shortages. Upon successful completion of the training, a soldier could reenlist in his new specialty and draw a selective reenlistment bonus.

Despite the success of the Army's reenlistment program, there still were critical shortages in some specialties. Efforts to identify problem areas and determine appropriate solutions were under way at the end of the year.

In March 1978 the Army finished converting all enlisted career management fields and military occupational specialties under the Enlisted Personnel Management System. Before the conversion there were 36 enlisted career fields with 451 specialties; now there are 30 fields and 345 specialties. The last group of career management fields (CMF) implemented this year included CMF 19 (Armor), which had been part of CMF 11 (Maneuver Combat Arms). Under the present system, CMF 11 covers only infantry, while armor has its own career field.

An important element of the system is the skill qualification test (SQT), which evaluates a soldier's ability to perform the critical tasks required by his specialty at his current and the next higher grade. The test began last year for three career management fields containing 89,023 soldiers, or about 13 percent of the enlisted force.

During the year skill qualification tests were instituted for five more fields, bringing 23,368 more soldiers under the program. Although problems have plagued the program since its inception, most were typical growing pains and did not dissuade the Army of its value in training and personnel management. It is a great improvement over the written MOS evaluation test.

MOS testing had been terminated in January 1977 to release resources for development of skill qualification tests. But budget and manpower cutbacks hampered TRADOC's ability to produce SQT's. The Deputy Chief of Staff for Personnel revised the SQT schedule and established new priorities in August 1978. Tests for specialties with the largest numbers of soldiers would be developed first, and SQT's for an entire career management field would be instituted at the same time to avoid actual or

perceived inequities. Most important, no soldier's opportunity for promotion was to be jeopardized as the result of the transition to skill qualification testing.

This year for the first time the Army used results of skill qualification tests to determine eligibility for reenlistment and promotion. Starting in January 1978, SQT scores of 60 percent or higher or at least in the 11th percentile were required for reenlistment. After 31 May 1978 soldiers had to achieve scores of 80 percent or be in the top half of their MOS to qualify for promotion to grades E–5 and E–6.

The Army revised the procedure for computing promotion points to reflect SQT scores as well as other changes in promotion criteria. The total possible points remained 1,000, but points in various categories were redistributed. A maximum of 150 points each could be awarded for SQT results and for the enlisted evaluation report weighted average. There were some major changes in the education category. Instead of 100 points for civilian education and 125 points for military training, the new system allowed a maximum of 200 points using any combination of civilian and military schooling. Since current policy requires all E–5's competing for promotion to E–6 to have a high school diploma, points were no longer given for high school attendance. E–4's, however, still received 15 points for each year of high school completed. College credit increased from one-half point to one point per hour. In the military education category, the number of points for correspondence courses was reduced to be more in line with points for resident training.

Changes were also made in the Army's qualitative management program. The purpose of the program is to raise the quality and professionalism of the enlisted force by denying reenlistment to unsatisfactory performers and improving career progression and promotion opportunity for individuals who are better qualified. In the past, regularly scheduled centralized promotion boards screened all personnel in grades E–6 through E–8 and E–5's with eleven or more years of service, and command sergeants major selection boards reviewed all personnel in grade E–9 (sergeants major and command sergeants major). This year the Army exempted soldiers who had completed twenty-eight years of active federal service and command sergeants major, regardless of time in service, from the qualitative screening process. An ineffective command sergeant major, however, could be removed from the command sergeants major program and included in the normal qualitative screening procedure as a sergeant major.

On the other hand, there are special provisions for retaining a small number of outstanding command sergeants major beyond the usual thirty years of service. During their twenty-eighth year of active federal service all command sergeants major are considered for retention to thirty-five years of service or age fifty-five, whichever occurs first. In the past the Army selected five command sergeants major for retention each year. Under a new policy approved in February 1978 by the Chief of Staff, a minimum of five command sergeants major will be selected annually, but more than five may be selected when the total number of command sergeants major on active duty beyond thirty years of service is less than twenty-five.

The enlisted grade structure remained relatively stable in fiscal year 1978. At the end of the year 64 percent of the enlisted force was in the top six grades, compared to 62 percent at the end of fiscal year 1977. The Army, however, was planning to increase strength in grades E–4 through E–8 by about 15,000 over the next five years, while concurrently decreasing strength in the lower enlisted grades. As a result, the proportion of career soldiers was expected to increase from the current 45 percent to 49 percent, or almost half of the enlisted force. These plans were approved by the Secretary of Defense on 22 September 1978. The following table compares the Army's budgeted and actual enlisted end strength by grade for fiscal years 1977 and 1978.

Enlisted Grade Structure

	30 September 1977		30 September 1978	
Grade	Budgeted	Actual	Budgeted	Actual
E-9	3,740	3,737	3,740	3,739
E-8	12,716	12,724	12,716	12,459
E-7	45,490	45,377	45,490	45,307
E-6	71,672	71,936	71,672	69,973
E-5	114,400	112,582	116,700	118,598
E-4	173,500	175,553	176,324	179,026
E-3	98,000	98,640	98,400	113,769
E-2	83,800	80,724	92,500	53,973
E-1	83,037	78,789	55,570	72,669
Total	686,355	680,062	673,112	669,513

Critics of the volunteer concept have often implied that today's average soldier is too uneducated to deal successfully with the sophisticated weapons of modern warfare. In response to such statements Army leaders have pointed out that the educational level of the enlisted force has been improving consistently since the end of the draft. At the end of fiscal year 1978—the fifth full year of the all-volunteer force—74 percent of active Army enlisted personnel had at least a high school diploma or

the equivalent. Another 9.5 percent had some college education, and 2.3 percent were college graduates. Only 14.2 percent of the enlisted force had not completed high school, compared to 16.4 percent in fiscal year 1977, 22.1 percent in fiscal year 1975, and 28.7 percent in fiscal year 1973.

Officer Personnel

The officer strength of the active Army, which reached a post-World War II peak of 172,367 in 1969, has been declining steadily during the 1970's. At the beginning of fiscal year 1978 there were 97,255 officers in the active Army. In April 1978 officer strength dropped to 95,672, the lowest level since 1950, and then rose again to 97,301 by 30 September 1978. The following table gives a breakdown of active Army officer strength by grade.

Officer Grade Structure
30 September 1978

Commissioned Officers	
General officers	416
Colonel	4,315
Lieutenant colonel	10,939
Major	16,264
Captain	28,541
First lieutenant	10,826
Second lieutenant	12,714
Total	84,015
Warrant Officers	
CW-4	1,378
CW-3	3,823
CW-2	4,980
CW-1	3,105
Total	13,286
Grand Total	97,301

Despite the Army's repeated requests to stabilize officer strength at about the 98,000 level, the Secretary of Defense directed a further reduction to 95,495 by the end of fiscal year 1979. As of 30 September 1978, however, Congress had not yet established the budgeted end strength for the next fiscal year.

This year officer accessions totaled 10,316, an increase of 477 or 4.85 percent from fiscal year 1977. As shown below, 4,537 or 44 percent of officers entered the Army through the Reserve Officers' Training Corps (ROTC), which continued to be the largest single source of new Army officers.

United States Military Academy	975
Reserve Officers' Training Corps	4,537
Officer Candidate School	651
Voluntary active duty	208

Direct appointment	
Judge Advocate General's Corps, chaplains, and Medical Service Corps	359
Medical Corps	876
Dental Corps	231
Veterinary Corps	33
Other	30
Nurses and medical specialists	867
Warrant officers	1,457
Miscellaneous*	92
Total	10,316

*Includes administrative gains such as recall from retired list and interservice transfers.

During the 1977/78 school year, 59,677 students (45,381 men and 14,296 women) were enrolled in Army ROTC, a gain of 5,006 over the previous year. About 22 percent of ROTC cadets were black, 5 percent were members of other minorities, and 24 percent were women. While total enrollment has increased, the desired levels of enrollment, especially for third year military science students, have not been attained. This means that the significant officer shortfall in the reserve components will increase. The Army supports greater use of scholarships as a cost-effective means of increasing enrollment substantially and attracting high quality individuals. The number of ROTC units decreased from 291 in 1973/74 to 280 at the beginning of the 1977/78 academic year and 275 by the end of the year. As a result of an intensive management plan to improve units with low enrollments, the Army consolidated small ROTC units in the same area into consortiums and established ROTC extension centers, which trained students from another institution together with students of the host unit.

A total of 6,500 students, the maximum authorized by law, received Army ROTC scholarships for the 1977/78 school year. There were 2,699 four-year scholarships, 2,513 three-year scholarships, 1,032 two-year scholarships, and 256 one-year scholarships. The Army was unsuccessful in its request for 5,500 additional scholarships. Only 11 percent of Army ROTC cadets had scholarships, compared to 76 percent for the Navy and 38 percent for the Air Force.

This year 1,783 students participated in the Army's Health Professions Scholarship Program. There were 537 graduates (362 in medicine, 126 in dentistry, 32 in veterinary medicine, and 17 in optometry), and 390 new participants (352 in medicine, 26 in veterinary medicine, and 12 in optometry). The number of scholarship applicants was 853, compared to 1,482 in fiscal year 1977. As a result of the decreasing value of benefits offered, the Armed Forces Health Professions Scholarship Program has become less competitive with other federal subsidy

programs, such as the National Health Services Corps Scholarship Program sponsored by the Department of Health, Education, and Welfare. The Army has proposed legislation to correct these deficiencies and increase participation.

The third freshman class consisting of 108 students entered the Uniformed Services University of the Health Sciences School of Medicine at Bethesda, Maryland. As of 30 September 1978 a total of 206 students were attending the university. Of these, 77 were designated as Army participants: 40 in the class of 1982, 25 in the class of 1981, and 12 in the class of 1980, which will be the first graduating class.

The Army Medical Department (AMEDD) acquired 2,542 new officers this year, a substantial increase over last year's 2,134 accessions. The following table breaks down officer procurement for fiscal year 1978 by source.

Army Medical Department Officer Accessions by Source for Fiscal Year 1978

	HPSP	ECP/ ROTC	Direct Procurement	Other	Total
Medical Corps (MC)	451	43	326	64	884
Dental Corps (DC)	123	23	87	1	234
Veterinary Corps (VC)	26	6	5	0	37
Medical Service Corps (MSC)	18	292	140	62	512
Army Nurse Corps (ANC)	0	32	635	96	763
Army Medical Specialist Corps (AMSC)	0	3	31	47	81
Warrant officers	0	0	31	0	31
Total	618	399	1,255	270	2,542

The officer strength of the Army Medical Department increased from 14,973 to 15,266 during the year, surpassing the authorized end strength of 15,002. The authorized strength, however, was based primarily on estimates of the number of officers expected to be on active duty, and did not reflect the recognized requirements for AMEDD officers, which were much higher. Only the Dental and Veterinary Corps did not meet their authorized end strengths this year. None of the AMEDD branches reached recognized requirements due to overall manpower allocations made in response to budgetary limitations. The largest shortages were in the Medical Corps and the Army Nurse Corps, as shown in the table below.

Army Medical Department Commissioned Officer Strength
30 September 1978

	Recognized Requirement	Authorized Strength	Actual Strength	Shortage from Recognized Requirement	Percent of Shortage
MC	5,875	4,009	4,140	1,735	29.5
DC	2,016	1,873	1,794	222	11.0

Army Medical Department Commissioned Officer Strength
30 September 1978—Continued

	Recognized Requirement	Authorized Strength	Actual Strength	Shortage from Recognized Requirement	Percent of Shortage
VC	407	385	378	29	7.1
MSC	4,734	4,625	4,629	105	2.2
ANC	5,602	3,660	3,872	1,730	30.9
AMSC	508	450	453	55	10.8
Total	19,142	15,002	15,266	3,876	20.25

At the beginning of fiscal year 1978 the actual strength of the Army Nurse Corps was 3,559. By the end of the year it had risen to 3,872. Of these 1,003 were Regular Army officers, 1,304 were career reservists, and 1,565 were obligated or first term officers. The number of men increased from 25 to 26 percent of total corps strength during the year. A concerted recruiting effort brought 763 new nurses into the active Army, compared to 435 active duty accessions in fiscal year 1977. The Walter Reed Army Institute of Nursing graduated its final class in June 1978, but more ROTC graduates entered the Army Nurse Corps this year and enrollment of nursing students in ROTC showed a marked increase. Financial assistance for nursing students continued to be available through ROTC programs at many universities.

The number of Dental Corps officers on active duty declined from 1,876 to 1,794, and fell 4 percent short of the authorized year-end strength. A major source of future dental officers was eliminated this year when the Health Professions Scholarship Program was discontinued for new dental students. The scholarship termination had an immediate negative effect on the recruitment of dentists. With an objective of 325 dental officers, the active Army was able to recruit only 234 dentists, 60 fewer than last year. Selected Dental Corps officers scheduled for release once again were encouraged to remain on active duty. Since the most critical shortage was in oral surgery, the Chief of the Dental Corps sent a special letter of information to every school and hospital in the United States where an oral surgery residency was conducted to attract volunteers.

Veterinary Corps officer strength continued declining, dropping to 378 by the end of September 1978. There were 405 on 30 September 1977 and 434 on 30 June 1976. Erosion of benefits remained a major deterrent to recruitment, and only forty-three veterinarians entered the active Army this year.

The Medical Service Corps, which has the greatest diversity of skills within the Army Medical Department, was able to recruit enough officers during 1978 for all specialties except nuclear medical science, sanitary engineering, and optometry. The

strength of the corps remained virtually unchanged, starting at 4,620 and ending at 4,629.

Officer accessions were also sufficient to meet the needs of the Army Medical Specialist Corps, which had 452 officers at the beginning of the fiscal year and ended with 453. This corps consists of occupational therapists, physical therapists, and dietitians. Because of the shortage of orthopedic surgeons, the Surgeon General assigned twenty additional spaces for physical therapists to serve as health care extenders in evaluating musculoskeletal disorders.

Last year the Army phased out its military physician's assistant training program, and this year twenty-one civilian-trained physician's assistants entered active duty. Since recruits from civilian sources alone apparently will not meet anticipated requirements for physician's assistants, starting in fiscal year 1979 the Army will either reopen its own training program or use Air Force training facilities. Individuals entering the program next year will graduate in fiscal year 1981. A special conference was held in December 1977 to review problems associated with physician's assistants in the Army.

After declining steadily for several years, the number of Medical Corps officers in the active Army increased during fiscal year 1978 from 4,056 to 4,140 and exceeded the authorized end strength of 4,009 by 3.3 percent. Active duty accessions for the year totaled 980, with the majority coming from the Health Professions Scholarship Program. Greater emphasis on recruiting fully qualified volunteer physicians brought 326 doctors into the Medical Corps this year, more than twice the fiscal year 1977 total of 147. Intensified recruiting, better management of Medical Corps officers, and special efforts to retain more doctors in the Army continued to receive top priority.

Significant accomplishments included a new Professional Services Directorate in the Office of the Surgeon General, with a general officer serving as Director and Chief, Medical Corps Affairs; publication of a quarterly bulletin for Medical Corps personnel summarizing the major actions of the Office of the Surgeon General, the Office of the Secretary of Defense, and Congress; development of three separate career tracks for Medical Corps officers, executive, clinical, and research and development; and establishment of the Surgeon General's Physician Recognition Award for outstanding service by Medical Corps officers, which offered a 21-day sabbatical at an accredited civilian or military institution of the physician's choice.

The actual strength of the Medical Corps at the end of fiscal

year 1978 was still 29.5 percent below the recognized requirement for active duty physicians. The doctor shortage has been a serious problem throughout the volunteer era since the end of the draft eliminated the major source of Army physicians. The all-volunteer Army would have great difficulty in meeting mobilization requirements and providing adequate medical support in time of war. Another consequence is reduced readiness to support disaster relief and contingencies short of mobilization. The doctor shortage has caused delays in health care, temporary interruptions of certain specialty services, and frequent referral of patients other than active duty soldiers to the cost-sharing Civilian Health and Medical Program of the Uniformed Services (CHAMPUS). Unfortunately, greater reliance on CHAMPUS has reduced morale and increased the total cost of health care.

The Army has taken a number of interim steps to relieve these problems. It has contracted for specialty health services, purchased supplemental health care, hired more civilian physicians, and expanded use of health care extenders, physician's assistants, and other paramedics. Such measures, however, are expensive and inefficient. Furthermore, they cannot be substituted to meet readiness requirements. Stronger incentives for physicians to select military service as a career are needed for a permanent solution. Most important are a Health Professions Scholarship Program that is more competitive with other federal programs, stabilized compensation reasonably comparable to income in the private sector, and greater opportunity for professional growth and development.

During fiscal year 1978 the number of officer promotions declined for the first time in four years. Excluding Medical and Dental Corps personnel, 470 officers were promoted to colonel, 1,337 to lieutenant colonel, 2,350 to major, 2,925 to captain, 319 to chief warrant officer, W–4, and 1,021 to chief warrant officer, W–3. Starting in February 1978 the time-in-service requirement for promotion to captain increased from forty-eight to fifty-four months. The change is being phased in over an eighteen-month period. Time-in-grade and time-in service criteria for promotion to other grades remained the same.

The Army's Officer Personnel Management System (OPMS), which replaced the traditional generalist philosophy of officer development, requires each commissioned officer to develop expertise in a primary and alternate specialty during his career. Last year for the first time OPMS specialties were considered in promotion selection to colonel. This year the Army directed the board

that selected officers for promotion to the grade of lieutenant colonel to consider the candidates' primary and alternate specialties. The board received a list of OPMS specialties in which a shortage of lieutenant colonels was expected during the next twelve months with instructions to search diligently for the officers best qualified for promotion in these specialties. But no promotion quotas were set for specialties with projected shortages.

Last year the Secretary of the Army established relook boards to reconsider promoting officers who were not selected for temporary promotion to lieutenant colonel, CW–4, or CW–3 in 1971 and 1972 by boards without reserve officers. These new boards with the appropriate number of reserve officers met between 13 September 1977 and 20 March 1978. As a result of their recommendations 812 officers still on active duty may be eligible for retroactive promotion and 123 former officers may apply to the Army Board for Correction of Military Records for some manner of relief.

In 1974 the Department of Defense proposed the most comprehensive legislation since 1947 to update the laws governing the appointment, promotion, separation, and retirement of commissioned officers. The Defense Officer Personnel Management Act has been submitted to Congress three times. This year Army leaders, again participating in congressional hearings, urged its passage. On 14 February 1978 the House of Representatives passed the bill by a vote of 351 to 7, but the Senate still had not taken any action by the end of the fiscal year. Meanwhile, the Army staff was helping the Office of the Secretary of Defense prepare the proposal for resubmission to the 96th Congress.

Manpower and Personnel Management

Since the Army is the largest federal agency, managing its personnel is an immense and challenging task. As a result of an extensive resource management study undertaken last year, this year the Vice Chief of Staff approved a realignment of Army staff responsibilities. Effective 1 October 1978 various manpower management functions will be transferred from the Deputy Chief of Staff for Operations and Plans, the Inspector General, and the Comptroller of the Army and consolidated under the Deputy Chief of Staff for Personnel. In July 1978, the Chief of Staff directed a complete review of military personnel management in the active Army to correct deficiencies and provide a systematic, integrated approach.

Borrowed military manpower, which refers to soldiers who

perform recurring or constant work other than their assigned work, remained a major issue. The Army revised its manpower management policy to permit commanders to use military personnel to offset civilian attrition. However, the prohibition remained against replacing civilians lost through reduction-in-force. Recognizing the mounting competition for shrinking resources, the Army changed the reporting procedures for borrowed military manpower to include more detailed data on its use and to show more precisely how much of the work was related to the soldier's specialty or his unit's assigned mission.

The new reporting system disclosed which functional areas were using borrowed military manpower, its impact on readiness, and how it could be corrected. During fiscal year 1978 the Army used the full-time equivalent of about 14,200 soldiers as borrowed military manpower, a number large enough to fill about seven combat brigades. Of these 76 percent were performing jobs related to their specialty or mission, while 24 percent were not.

Efforts continued to reduce the military grade imbalances reflected in personnel authorization documents and the Army's budgeted grade structure. The ad hoc group organized in May 1977 to study this problem determined that among the factors contributing to the grade imbalance were inadequate grading standards and incorrect application of existing standards by major Army commands, which approved about 98 percent of all personnel authorizations. The group recommended imposing mandatory grade ceilings on major commands, but a general officer steering group did not approve this proposal. Further study showed that the Army needed more comprehensive grading standards and manpower accountability procedures.

In April 1978 the Army revised the procedure for changing personnel and equipment authorizations. In the past field commands could request changes at any time. Under the new system, proposed changes may be submitted to the Army staff only between January and March and between July and September of each year, although exceptions can be made in particularly urgent cases. This arrangement not only enables field commands to request changes in a more systematic manner, but also allows the Office of the Deputy Chief of Staff for Personnel, which reviews the requests, and the Office of the Deputy Chief of Staff for Operations and Plans, which operates the computerized authorization documents systems, to handle them more efficiently.

Reducing personnel turbulence has been a matter of high priority in recent years as a means of increasing operational

readiness, improving the quality of military life by creating a more stable environment, and lowering the costs of moving soldiers and their dependents from station to station. Since 1975 the Army has taken a number of steps in this direction. As a result the time between moves has increased, the number of moves has declined, while the total costs of moves has begun to level off despite inflationary increases in the cost per move. The following table shows the progress.

Permanent Changes of Station Moves and Costs

	FY 74	FY 75	FY 76	FY 77	FY 78
Average months between moves	21 4	—	24 7	26 4	29 3
Number moves	731 7	692	669 5	647 5	531 1
Cost (millions)	$395 0	$467	$539 0	$579 0	$507 0

The figures given above for fiscal year 1977 include 19,500 moves and $38 million to eliminate involuntary overseas tour extensions. The Army's overseas commitments accounted for 48 percent of all permanent changes of station and 73 percent of moving costs in fiscal year 1978.

Congress continued to show great interest in personnel turbulence and the associated moving costs. In December 1977 the Department of Defense issued a directive announcing new assignment policies specifically designed to alleviate the problem. There would be no permanent changes of station within the continental United States solely due to the passage of a stipulated period of time. Assignment procedures would permit tour completion, encourage voluntary tour extension, and consider cost. First term personnel who enlisted for three years would be given only one assignment after initial training unless required to serve a short tour, in which case two assignments would be permitted. General officer assignments would be for a minimum of two years. Insofar as possible, assignments in the United States would be for three years or more. This provision, however, would not apply to individuals ordered overseas, and a two-year minimum would apply for officers selected to attend a senior service college. The Army began carrying out the new policies in February 1978. The Defense directive also guaranteed homebase or advanced assignment for personnel in grades E–5 through O–5 stationed in unaccompanied tour areas, but this policy had already been in effect in the Army since January 1976.

While the Army supported efforts to reduce personnel turbulence, decrease moving costs, and provide greater tour stability, it also initiated action to shorten tour lengths in Europe to

twenty-four months for soldiers with no dependents who enlisted for four or more years. These soldiers have been serving a minimum of thirty-six months overseas and many spent up to forty-two months in Europe. Such long overseas tours for young bachelors have caused morale and discipline problems. Reducing the tour length should alleviate these problems, would return the soldiers early enough to permit an eighteen-month tour in the United States before the expiration of their enlistment, and could improve the reenlistment rate for this group. A request for $7.3 million for 5,400 additional moves to accomplish the tour reduction was included in the Army's fiscal year 1979 budget, which had not been approved by Congress as of 30 September 1978.

In other actions related to tour lengths, the Office of the Deputy Chief of Staff for Personnel considered ways of reducing tours for three-year enlistees. The U.S. Army, Europe, and the Army Research Institute worked on a study on optimum tour length, the need for shorter tours, and the savings which would result. Meanwhile members of Congress were discussing the merits of a two-year enlistment option for the combat arms.

Pay, Leave, and Travel

The President's Commission on Military Compensation, appointed by President Carter in June 1977, published its report on 10 April 1978. The commission concluded that the present system of basic pay and tax-free allowances for quarters and subsistence is preferable to a fully taxable salary for military personnel. But the report stated that this system and policies concerning pay raises, bonuses, and incentive pay should be modified. The Secretary of Defense, for example, should have discretionary authority to make differential reallocations of annual pay raises. Finding that service members stationed in high cost-of-living areas and junior enlisted personnel in general bore undue financial burdens, the pay panel proposed a variable basic allowance for quarters to reflect geographic differences in housing costs and certain entitlements for junior enlisted personnel normally granted only to higher grades, such as allowances for travel and transportation of household goods. The commission also noted widespread dissatisfaction with military health care, especially for dependents, and recommended a thorough study of how it might be improved.

Perhaps the most significant proposal was a radically changed military retirement system. The commission suggested a new noncontributory retirement plan based on an old-age annuity, a

deferred compensation trust fund, and severance pay for personnel involuntarily separated with five or more years of service. Military and civil service retirement plans would be coordinated, dual compensation would be eliminated, and retired military pay would be adjusted when social security benefits began. Individuals on their second enlistment, beyond their initial term of obligated service, or in their fifth year of military service, would be permitted to retire under the old rules, but all others would come under the new system. The President has directed the Secretary of Defense to review the commission's recommendations and to propose appropriate legislation in time for the opening session of the 96th Congress in January 1979.

Before the commission submitted its report, the Department of Defense had already taken action to reduce some of the financial burdens of junior enlisted personnel. The fiscal year 1979 budget included a request for funds to extend overseas travel and transportation entitlements, currently limited to grades E–5 and above and to E–4's with more than two years of service, to junior enlisted personnel. The Army's share of the requested funds was $47.4 million ($41.3 million in permanent change of station funds and $6.1 million in overseas station allowances). The new program would allow married junior enlisted personnel assigned to overseas duty stations to ship their household goods and automobiles at government expense and authorize travel, temporary lodgings, and cost of living allowances. Soldiers who did not wish to take their families and household goods overseas would be authorized to relocate them within the United States. Single or unaccompanied junior enlisted personnel would also benefit. They would be permitted to ship their automobiles and up to 500 pounds of baggage, more than double the present 225-pound limit.

During the congressional appropriation hearings Army leaders emphasized that junior enlisted travel (JET) funds should be recognized as part of the cost of fulfilling the Army's overseas mission. They pointed out that the present system saves the taxpayer's money only at the expense of the lowest paid enlisted personnel. In today's Army approximately one-third of the soldiers in grades E–1 through E–4 are married, compared to about one-fourth ten years ago. Thus increasing numbers of soldiers face either severe financial hardship or enforced family separations for extended periods, both of which have had an adverse effect on marital stability among young service families.

At present about 68 percent of married junior enlisted personnel maintain their dependents in Europe at their own

expense. The Army estimates that the new program would increase the number of families in Europe by 4,000 and the number of dependents by 5,000. In order to qualify for the benefits, however, junior enlisted personnel would have to agree to serve longer tours overseas. The JET program is a key element of the Army's commitment to provide a reasonable quality of life for all soldiers. This commitment, in turn, should attract and retain high quality soldiers willing and able to commit themselves fully to the Army.

The House Appropriations Committee supported junior enlisted travel benefits, but imposed a 1,500-pound limitation on household goods. The Senate Appropriations Committee voted against the proposal on the grounds that it would increase the number of dependents overseas and place more individuals under the financial strain already experienced by Americans living abroad as a result of the shrinking value of the dollar. The JET program was brought up on the floor of the Senate as an amendment to the fiscal year 1979 Defense Appropriations Authorization Bill and was sent to a joint conference committee for resolution.

In another effort to improve morale and efficiency, an interservice committee chaired by the Army recommended a funded environmental and morale leave program for all military personnel serving a minimum of twenty-four months at certain isolated locations. The Chief of Staff approved the proposal in June 1978 and directed the Judge Advocate General to draft the necessary legislation. The Army also drafted and sent to the other services for comment proposed legislation to permit the use of appropriated funds for emergency leave travel for members of the armed forces and their dependents. Emergency leave travel is currently authorized only on aircraft owned or controlled by the Military Airlift Command, and military personnel stationed in remote areas where such service is infrequent or nonexistent must travel at their own expense or remain at their duty station.

Another problem facing many members of the armed forces is payment of advance rent, which in certain areas requires extraordinarily large outlays of cash. Soldiers often have to pay as much as $4,000 in advance rent or security deposits. Although a housing allowance is available to defray excess housing costs outside the United States, it is paid at the end of each month without provision for advance payment. The Army proposed legislation to authorize advance payment of overseas housing allowances in areas where military personnel are required to pay

unusually large sums for advance rent. At the end of fiscal year 1978 this proposal was awaiting congressional action.

In July 1976 Congress authorized the President to reallocate up to 25 percent of basic military pay increases to allowances for quarters or subsistence, which are tax exempt. Last year President Carter reallocated 12 percent of the 1 October 1977 pay raise to the basic allowance for quarters. This year, however, the President decided not to reallocate any of the 5.5 percent increase in basic pay effective 1 October 1978 to the tax-free quarters or subsistence allowance.

Congress again extended tax relief for students enrolled in the Armed Forces Health Professions Scholarship Program. Current students and those entering the program before 31 December 1978 will not pay income taxes on their scholarship stipends. Tax exemption for future scholarship recipients was still under study at the end of the year.

Although new incentive pay legislation for medical personnel was introduced in both houses, Congress has not yet taken action on either bill. Nor did Congress extend any current medical incentive pay programs beyond 30 September 1978.

Under the provisions of the Tax Reform Act of 1976, state income tax withholding from active duty pay of military personnel began in July 1977. By the end of fiscal year 1977 the Finance and Accounting Center was withholding state income taxes from the pay of soldiers who were legal residents of twenty-three states and the District of Columbia. This year the center began withholding taxes for legal residents of California, Hawaii, Maine, Minnesota, Mississippi, Ohio, and Oregon, but California residents had state income tax withheld only if they were stationed in California.

Leadership and Motivation

Commitment to military service depends not only on such tangible benefits as pay and allowances, but also on a number of intangible factors. One is effective leadership. And one of the essential elements of good leadership is trust.

In August 1978 the Chief of Staff approved the report of a review group which last year identified 197 policies in Army regulations tending to undermine trust in officers. After copies were distributed to all major Army commands and staff agencies, policy proponents began appropriate action. The objective was to create a leadership climate stressing trust and integrity rather than excessive controls and overmanagement. Detrimental policies and many unnecessary administrative requirements

would be eliminated. The review made many aware of the seriousness of the officer trust issue.

During the fiscal year substantial progress was made in an Army-wide organizational effectiveness (OE) program. While most of the program was conducted in battalions and brigades, OE techniques were employed with increasing regularity at installation, division, and higher levels. By the end of the year 363 officers had completed sixteen weeks of intensive training at the Organizational Effectiveness Training Center at Fort Ord, California, and were assigned to units throughout the Army as organizational effectiveness staff officers. OE instruction was introduced into the Army service school system, and an experimental training program was developed to determine how the noncommissioned officer might promote organizational effectiveness. The Army plans to send ninety noncommissioned officers for OE training at Fort Ord during fiscal year 1979. Other plans call for institutionalizing OE in the active Army, extending the program to the reserve components, and providing civilian OE staffs to commands with high ratios of civilian personnel.

Although organizational effectiveness is relatively new to the Army, it uses leadership and management principles that have yielded impressive results in industry. OE is a valuable commander's tool. If properly used, it results in better communications and teamwork, more efficient management of time and other resources, and greater commitment of all personnel to accomplishing their unit's mission. Army leaders are convinced OE will improve individual productivity, unit performance, and total Army readiness.

In October 1977 the Department of Defense issued a directive on organizations seeking to represent members of the armed forces in negotiation or collective bargaining about military service. Army Regulation 600–80, which implemented the Defense directive, was published in January 1978. It prohibited commanders and supervisors from engaging in negotiation or collective bargaining and soldiers from participating in strikes, slowdowns, work stoppages, picketing or other actions that would hamper the performance of military duties. Activities such as demonstrations, marches, and speechmaking for the purpose of recruiting members for unions were prohibited on military installations. Finally, AR 600–80 provided that no member of the Army may become or remain an active member of any organization that presents a clear danger to discipline, loyalty, or obedience to lawful orders.

The Senate passed a bill prohibiting unionization of the

armed forces in September 1977. Hearings on military unions continued in the House of Representatives during fiscal year 1978. In September the House passed a revised version of the Senate bill, which amended the provisions concerning union membership for civilian technicians of the reserve components. By the end of the fiscal year no decision had been made on which version would be sent to the President for signature.

Alcohol and Drug Abuse

The Army continued its efforts to prevent and control the abuse of alcohol and other drugs by soldiers, retired personnel, military dependents, and civilian employees. During fiscal year 1978 a total of 22,647 persons entered rehabilitation under the Army-wide Alcohol and Drug Abuse Prevention and Control Program: 10,449 for alcohol abuse, 7,659 for abuse of other drugs, and 4,539 for abuse of both alcohol and other drugs. Since a major goal of the program is to return soldiers to their units as productive members, the Army revised the reenlistment criteria for participants. Six months after successfully completing the active phase of rehabilitation, soldiers who voluntarily enrolled in the program were eligible for reenlistment without a waiver if they met all other reenlistment requirements. Previously a rehabilitated soldier had to wait at least fourteen months and get a waiver from his commander to reenlist.

The Chief of Staff approved the establishment of a drug/alcohol technical activity consisting of six officers and six enlisted personnel. It will aid field commands regarding the technical aspects of the Alcohol and Drug Abuse Prevention and Control Program. This activity should be operational by 1 January 1979.

The Director of Human Resources Development in the Office of the Deputy Chief of Staff for Personnel (ODCSPER) was planning to establish and chair an alcohol/drug review board, which was to include representatives from the offices of the Surgeon General and the Inspector General, ODCSPER's Law Enforcement Division, other Army staff agencies, and members of such organizations as the National Institute of Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism. Last year the emphasis was on preventing alcohol abuse. This year the Army stressed law enforcement efforts to detect the possession, use, and sale of hard drugs to stop their flow to Army personnel, particularly in Europe.

After a year of intensive investigation, in May 1978 the Select Committee on Narcotics Abuse and Control of the House of Representatives concluded that drug abuse in the military services was severe enough to impair the national defense. In July

1978 the Deputy Secretary of Defense testified before this committee. He admitted that drug abuse was a serious problem but insisted that it was not as widespread as the congressmen believed; he stated there was no evidence that it had impaired combat readiness. The deputy secretary outlined a twelve-point program for improving drug abuse prevention. One called for establishing an international drug enforcement task force in Berlin, where illegal traffic in hard drugs, especially heroin, has been rising at an alarming rate.

The other measures were: a comprehensive survey of the drug problem; adopting new statistical techniques to assess the extent and distribution of drug abuse; improving procedures for reporting drug abuse data; accelerated testing of portable urinalysis equipment; mandatory seminars on drug abuse for service members and their families; greater emphasis on drug abuse prevention among military dependents; establishing a task force to review legal enforcement of drug abuse control; a review of investigation and prosecution by civil authorities following arrests for drug offenses on military installations; researching the relationship between drug abuse and military performance; and a thorough evaluation of drug prevention efforts. The final and perhaps most important measure was increasing the number and quality of personnel responsible for matters relating to drug abuse, starting with the appointment of a Special Assistant for Drug Abuse to the Assistant Secretary of Defense for Health Affairs.

The Army has a major role in carrying out this twelve-point Defense program. By the end of fiscal year 1978 Army personnel had prepared drafts of special educational packages on drug abuse, tested portable urinalysis kits, and participated in a fact-finding tour of military installations in the Pacific. The Army also began studies on the effects of drug abuse on military performance and combat readiness and the relationship between leadership and drug abuse. In August 1978 key members of Army law enforcement organizations met in Leesburg, Virginia, to evaluate current drug enforcement programs and recommend changes. Some of these recommendations were submitted to the Defense task force on drug enforcement. Others can be accomplished within the Department of the Army, provided the Secretary of Defense authorizes additional resources.

Discipline, Law Enforcement, and Military Justice

Since the beginning of the volunteer era there has been a substantial and steady improvement in Army discipline. As shown in Table 1, this trend continued in 1978. Crimes of

TABLE 1—INDISCIPLINE INDEX

(Rate per 1,000)

Calendar Year	Quarter	Absence Without Leave	Desertion	Crimes of Violence	Crimes Against Property	Marihuana Use and Possession	Other Drug Offenses	Courts-Martial	Non-Judicial Punishment	Separations Less than Honorable
1973	3	42.9	14.4	1.99	23.27	5.98	2.21	7.42	57.71	8.83
	4	28.8	9.0	2.01	22.78	6.85	1.94	6.88	51.80	8.69
1974	1	30.1	8.8	2.04	21.70	8.59	2.24	6.85	56.49	7.79
	2	28.1	8.9	1.90	22.12	7.96	2.06	6.50	54.32	7.21
	3	28.0	8.3	2.21	22.45	7.79	1.92	6.02	52.78	7.05
	4	21.8	6.8	2.10	23.50	8.16	2.00	5.25	48.01	6.38
1975	1	22.9	5.7	2.09	21.95	8.49	2.24	5.05	57.48	5.95
	2	19.6	5.2	1.98	21.96	7.58	2.31	4.25	55.76	6.21
	3	18.8	5.0	2.14	22.72	6.11	2.06	3.83	52.24	7.47
	4	12.9	3.7	1.75	22.04	6.45	1.82	3.33	45.72	6.11
1976	1	14.2	3.2	1.65	20.44	8.61	1.61	3.18	51.87	6.05
	2	15.1	3.5	1.66	22.33	8.04	1.53	2.92	53.05	6.02
	3	16.0	4.0	1.93	22.79	8.33	1.58	2.63	56.95	5.01
	4	11.1	2.9	1.58	19.48	7.60	1.38	2.71	50.58	4.66
1977	1	10.0	2.6	1.43	18.23	8.08	1.48	2.85	54.16	4.83
	2	13.6	3.4	1.51	19.28	7.33	1.47	2.34	54.34	4.32
	3	15.3	3.9	1.76	21.81	6.90	1.22	2.44	54.50	4.45
	4	10.5	2.8	1.56	19.97	6.52	1.19	2.41	47.53	4.20
1978	1	12.2	2.8	1.49	17.91	7.32	1.42	2.51	51.87	3.99
	2	12.5	3.3	1.51	18.19	7.36	1.29	2.51	52.47	3.68
	3	13.5	4.0	1.48	18.58	6.91	1.19	2.46	48.52	3.74

violence (murder, rape, robbery, and aggravated assault), crimes against property (larceny, burglary, housebreaking, and auto theft), possession and use of marihuana, and other drug offenses were all below last year's levels. Absence without leave, courts-martial, nonjudicial punishment, and less than honorable separations also continued to decline. Although the desertion rate increased slightly, it remained well below the rates for fiscal year 1976 and the preceding years. Also, the number of prisoners in Army confinement facilities reached an all-time low. For example, the facility at Fort Dix, New Jersey, which was designed to hold up to 416 inmates, had only eleven prisoners in January 1978.

Both the number of persons tried and the number of persons convicted by all types of courts-martial decreased this year, by 7.1 and 5.3 percent respectively from the year before. The breakdown of court-martial statistics for fiscal year 1978 was as follows:

	Convicted	Acquitted	Total
General	891	130	1,021
Special	4,128*	627	4,755*
Summary	1,646	202	1,848
Total	6,665	959	7,624

*In 629 of these cases, the approved sentence included a bad-conduct discharge.

The special discharge review program for reconsidering less than honorable discharges issued to service members during the Vietnam era ended on 4 October 1977. Although it was estimated that about 210,000 former soldiers were eligible for the program, only 37,605 had applied by the termination date. Review boards heard 24,345 of these cases and upgraded the discharges of 13,228 former Army personnel.

Public Law 95–126, enacted on 8 October 1977, ordered a review of the discharges upgraded under the special discharge review program and President Ford's clemency program to determine eligibility for veterans benefits. Since the deadline for completing the review was 7 October 1978, it created a large backlog in the regular cases of the Army discharge review board. The law also waived the fifteen-year limitation for applying for an upgraded discharge. Many new applications were submitted, further aggravating the case backlog.

From 1 December 1976 through 30 November 1977 there were 67,856 cases in which U.S. military or civilian personnel stationed overseas or their dependents were charged with criminal offenses subject to the jurisdiction of foreign courts. A total

of 47,006 offenses were charged against soldiers. Of these 14,263 involved violations of both U.S. and foreign law, with the host country having primary jurisdictional rights. Foreign countries waived that right in 13,906 cases, or 97.5 percent. As of 30 November 1977 ninety-three soldiers were in foreign confinement, compared to ninety-nine soldiers a year earlier.

In January 1978 the Army held its first worldwide corrections conference at Fort Leavenworth, Kansas. Participants discussed past trends, current problems, and future efforts of the Army corrections program. They made the following recommendations: keeping the program centered at the disciplinary barracks at Fort Leavenworth and the retraining brigade at Fort Riley, Kansas; returning more disciplinary barracks inmates to duty through the retraining brigade; easing reenlistment restrictions on retraining brigade graduates; expanding the vocational training program at the disciplinary barracks to achieve financial self-sufficiency; and consolidating corrections management under Headquarters, Department of the Army, with direct general officer support and involvement.

The conference members argued strongly that the Army work toward a unified Defense corrections system and encourage joint service participation whenever possible. Decentralization would be inefficient and costly. Further, the Army should reorganize its seventeen confinement facilities in the continental U.S. as detention facilities, similar to those in the Air Force. Installation commanders should be encouraged to find alternative uses for the unused portions of each facility, but the Army should retain control for mobilization needs. Finally, corrections conferences should be held each year.

In June 1978 President Carter directed the Office of Management and Budget to review all federal law enforcement missions, programs, tasks, and priorities as part of the President's reorganization project. By the end of September three issues of concern to the Army had been identified: a recommendation by the Federal Bureau of Investigation to reexamine the Posse Comitatus Act of 1878, which prohibited the use of federal troops except in such circumstances as were expressly authorized by the Constitution or an act of Congress; a proposal from the Bureau of Alcohol, Tobacco, and Firearms concerning investigation of firearm thefts from military installations; and an FBI decision that the bureau will conduct investigations for the purpose of apprehending deserters only in those cases where aggravating circumstances exist in addition to desertion or a national security matter is involved.

Congress had already reduced the Army's fiscal year 1978 budget for apprehending and processing deserters due to recommendations by the General Accounting Office to stop apprehension and to discharge in absentia following a stipulated period. Army leaders argued such discharges could adversely affect troop morale. Furthermore, favorable discipline trends could be reversed if deterrent programs were removed.

In July 1978 the Army, the other military departments, and the Defense Investigative Service proposed a coordinated plan to upgrade military deserter apprehension. It provided for the involvement of local and state law enforcement officials, a practice which had been effective in the past, and recommended an increase in the reimbursement authorized for local and state agencies. The plan advised against active involvement of the Defense Investigative Service on the grounds that it would be too costly. It also advised against further cutting the military services' fiscal or manpower resources committed to deserter apprehension.

The Army's military police investigator program was further expanded in fiscal year 1978. In August a new regulation went into effect incorporating the realignment of investigative responsibilities approved last year and many improvements derived from a comprehensive review of the program. Military police investigators and supervisors continued attending training courses offered by the Drug Enforcement Administration.

Prototype testing of the offense reporting system, a subfunction of the automated military police management information system, had been scheduled for this year but was postponed until fiscal year 1979. The system has been redesigned to identify crime problems within units, trace repeat offenders from unit to unit, and summarize actions against offenders.

Better management of law enforcement resources was emphasized again this year. The Army began carrying out the plan to elevate organizational professionalism in law enforcement, which had been developed in fiscal year 1977. Some accomplishments were eliminating a number of law enforcement policy voids, revising training courses, restructuring training resources, and approving the placement of all installation law enforcement assets and activities under a single manager. By reducing the personnel operating confinement facilities, changing the status of certain police unit positions from military to civilian, and discontinuing soldier participation in armed forces police detachments, the Army increased the resources committed to physical security on military installations in Europe.

At the direction of the Chief of Staff, on 15 May the Army began a one-year test of the U.S. Army Trial Defense Service, a new military defense counsel organization. The reasons for establishing such a service were similar to those which ten years ago prompted the Army to establish an independent organization for military trial judges. Studies showed that many soldiers felt military defense counsels had divided loyalties because they were assigned to the command of the court-martial convening authority. Although cases of so-called command influence were rare, the perception of conflicts of interest persisted.

The primary mission of the defense service is to provide specified defense services at the installation level. These include representing soldiers in general and special courts-martial, before administrative discharge boards, and during investigations under Article 32 of the Uniform Code of Military Justice. Advice and consultation are furnished in nonjudicial punishment, custodial interrogations, lineups, summary courts-martial, and other actions requiring defense counsel. In general, the service will improve the professionalism and efficiency of defense counsel.

In its test phase, the Trial Defense Service consists of forty-eight officers headed by a senior colonel. They are assigned to the U.S. Army Legal Services Agency, a field operating agency of the Judge Advocate General. The sixteen installations serviced by Trial Defense Service attorneys are divided into three regions, each under a regional defense counsel. The Assistant Judge Advocate General for Civil Law has overall program supervision. Test results to the end of the fiscal year were favorable, and no significant problems were encountered. The program will be evaluated by participants, commanders, staff judge advocates, and others charged with administering military justice. At the conclusion of the test, a final report with recommendations will be submitted to the Chief of Staff.

Equal Opportunity

The fundamental purpose of the Army's Affirmative Action Plan (AAP) is to provide genuine equal opportunity to all soldiers regardless of race, sex, or national origin. Equal opportunity improves morale, discipline, and effectiveness, whereas discrimination detracts from individual performance and unit readiness. The annual assessment report for calendar year 1977 required by the AAP showed progress toward identifying and eliminating institutional discrimination in the Army.

Among the important achievements were rising minority and female enrollment in officer commissioning programs such as

ROTC, Officer Candidate School, and the U.S. Military Academy; increasing minority and female strength in the Army Medical Department; and favorable career schooling selection rates for minorities and women among both officers and senior noncommissioned officers. There was a substantial increase in the number of black commissioned and warrant officers in the active Army, with particularly impressive gains for black company grade officers. When these young officers are promoted, there will be significant increases in the number of black field grade officers. The following table shows the rise in black officers by grade between December 1974 and December 1977.

Percentage of Black Officers by Grade

	Dec 1974	Dec 1975	Dec 1976	Dec 1977
Commissioned Officers				
General officers	2.6	3.0	2.8	3.0
Colonel	2.6	3.3	3.7	4.0
Lieutenant colonel	5.5	5.1	5.1	5.2
Major	5.0	5.0	4.9	4.8
Captain	4.4	4.4	5.1	5.6
First lieutenant	4.5	5.5	7.5	8.9
Second lieutenant	4.4	6.4	8.3	10.0
Subtotal	4.6	4.9	5.7	6.3
Warrant Officers				
CW-4	3.8	4.0	4.7	5.5
CW-3	5.2	5.3	5.2	5.1
CW-2	5.0	5.4	5.7	6.5
WO-1	5.2	2.9	5.1	6.0
Subtotal	5.0	4.8	5.4	5.9
Total	4.6	4.9	5.6	6.2

The assessment report cautioned the Army to avoid complacency. As in the rest of American society, discrimination and racial tension have not been totally eliminated. It identified three problem areas requiring special attention. One was the high rate of punitive actions against black soldiers, including the disproportionate number of bad conduct and dishonorable discharges and the large percentage of black prisoners in Army confinement. The Chief of Staff was concerned about these disturbing trends and called for prompt investigation of the underlying causes.

Another problem was the low number of minority and female officers in the reserve components. By recruiting more ROTC graduates and officers leaving the active Army, the reserve components were anticipating minority and women officer strength gains by 1981.

The report pointed out racial imbalances in enlisted career management fields. Blacks were underrepresented in certain fields and overrepresented in others. Although critics of the

all-volunteer Army claimed that blacks bore more than their share of the load in the combat arms, the assessment report indicated they were proportionately represented in infantry, armor, and combat engineers, and only slightly overrepresented in field and air defense artillery.

One field whose minority content did not represent the total enlisted force was CMF 95 (law enforcement). As of 30 June 1978 the enlisted personnel in MOS 95B (military police) was 13.2 percent black and 1.7 percent Hispanic; the percentages of blacks and Hispanics in the enlisted ranks were 28.9 and 3.8 percent, respectively. The Army intensified recruiting efforts to improve the attractiveness of the law enforcement field, specifically the military police specialty, to potential minority enlistees. It also changed the minimum male height entry standard from sixty-nine to sixty-four inches, thus creating a broader base for minority recruitment, particularly among Hispanics and Asian/Pacific Islanders. Such efforts support the Army's commitment to affirmative action and effective law enforcement.

The Affirmative Action Plan, first published in 1972 and revised in 1975, was updated again this year. Since the plan's success is dependent on the support of commanders and functional managers at all levels, the revised plan increased their participation. To link staff and field efforts, more responsibility was given to major commands. The 1975 AAP had concentrated on racial minorities; the new plan concentrated on ethnic minorities and women. It required more detailed data on ethnic minorities by enforcing the Department of Commerce standard classifications of white, black, Hispanic, Asian, and native American. Finally, the new AAP changed report periods from calendar to fiscal years and eliminated quarterly reports.

Another important component of the Army's equal opportunity program is education and training. In accord with an Army regulation published last year, equal opportunity training has been broadened to foster harmony among soldiers and to be more adaptable to local situations.

In 1971 the Defense Race Relations Institute was established to train armed forces personnel as instructors in race relations. Its mission was later expanded to include training of personnel performing duties related to human or race relations and equal opportunity. This year a joint-service committee revised its curriculum to broaden the scope of the course and improve the skills of the graduates. The new sixteen-week course was tested during the summer of 1978 and will be offered on a regular basis starting in November 1978. Students will be trained in organiza-

tional effectiveness and racial, sexual, and institutional discrimination. Plans have been made for refresher training for former graduates operating in the field.

Women in the Army

In a special ceremony at the Pentagon on 28 April 1978, the Secretary of the Army abolished the positions of Director and Deputy Director, Women's Army Corps, and disestablished the office of the director. At the same time Secretary Alexander announced that Brig. Gen. Mary E. Clarke had been reassigned as the new commander of the Military Police School/Training Center and Fort McClellan, Alabama. Thus the last director of the Women's Army Corps became the first female commanding general in the history of the U.S. Army. Later in the year her name appeared on a list of twenty-seven officers nominated for promotion to major general, and General Clarke became the first woman nominated for a second star.

These events were part of the continuing integration of women into the mainstream of the Army. As full and equal partners on the Army team, women no longer needed a separate staff agency devoted exclusively to their affairs. Legislation was also submitted to Congress to abolish the Women's Army Corps.

The number of women in the Army has increased dramatically during the volunteer era. When the draft expired on 30 June 1973, there were 20,700 women in the active Army. By the end of fiscal year 1978, the number had risen to more than 56,000. In addition, there were 13,570 women in the Army National Guard and 22,379 women in the Army Reserve. In fiscal year 1978 the number of enlisted women in the active Army rose from 46,094 to 50,292, and the number of women officers rose from 5,696 to 6,292. At the end of the fiscal year, 7.5 percent of the enlisted personnel and 7.4 percent of the commissioned officers were women.

Women officer accessions for the year totaled 1,313. Of these 845 received their commission through ROTC and 53 through Officer Candidate School. The 14,296 women enrolled in ROTC programs during the 1977/78 school year were 24 percent of the total enrollment, a remarkable achievement considering women were first enrolled in ROTC only five years earlier.

As of 30 September 1978 the U.S. Military Academy at West Point had 257 women cadets, or about 6 percent of the student body. The difference in male and female attrition rates was considerably smaller for the class of 1981 than for the class of

1980, while women in the class of 1982 had a lower attrition rate than men.

Women have not been applying for warrant officer positions in the numbers expected, although the program has expanded slightly since 1973 when the active Army had only nineteen female warrant officers. By the end of fiscal year 1978 there were sixty-eight women among the active Army's 13,287 warrant officers. As the number of women in the Army grows, the number of women warrant officers should grow accordingly.

During fiscal year 1978 the active Army recruited 17,517 women. For the first time the Army had trouble recruiting women and fell eighty-three short of the annual female objective. Two factors contributing to the shortfall were an OSD decision to increase female strength in the Army by 18 percent over last year's objective and an Army decision to enlist women in skills where they were most needed, rather than the more popular traditional skills. However, the quality of women recruits remained very high; 96 percent had high school diplomas and 100 percent were in the upper mental categories (Groups I–IIIA).

This year all enlisted women received the new basic initial entry training approved in 1977, but men and women trained together only at Fort Jackson, South Carolina. Plans were made to train men and women together at Fort McClellan, Alabama, Fort Dix, New Jersey, and Fort Leonard Wood, Missouri, starting in October 1978.

In recent years the role of Army women has greatly expanded. On 20 December 1977 the Secretary of the Army approved a new combat exclusion policy which opened more opportunities for female soldiers than ever before. It allowed women to serve in any officer or enlisted specialty, at any organizational level, and in any unit except infantry, armor, cannon field artillery, combat engineers, and low altitude air defense artillery units of battalion or smaller size. By the end of the fiscal year 222 out of 232 commissioned officer specialties, 57 out of 59 warrant officer specialties, and 323 out of 345 enlisted specialties were open to women. Women were serving in such fields as missile maintenance, communications-electronics operations, and ammunition, and were assigned to combat support and combat service support units in combat divisions, air defense Hawk and Nike-Hercules battalions, field artillery Lance battalions, and brigade-level headquarters. For the first time women served on honor guard duty at White House ceremonies. As the Chief of Staff stated in a message to the field in March 1978:

"Today, women are successfully performing a wide variety of duties, many of which were considered solely in the male domain just a few years ago."

Traditional women's skills are in the medical and administrative career management fields; less traditional are automatic data processing, supply and service, recruitment and retention, public affairs, audiovisual, food service, law enforcement, and military intelligence; nontraditional are the specialties in the remaining twenty-one enlisted career management fields. At the end of this fiscal year, 43 percent of enlisted women in the active Army were in traditional women's skills, 24 percent were in less traditional fields, and 34 percent were in nontraditional specialties. In the reserve components, 87 percent of enlisted women in the Army National Guard and 76 percent of those in the Army Reserve were assigned to administrative and medical fields.

Some specialties are more attractive to women than others, and the Army's ability to recruit women into nontraditional fields varies accordingly. Additional recruiting resources are essential for the Army to acquire the women needed in certain fields.

Furthermore, women tend to migrate from nontraditional to traditional specialties. An analysis completed by the Military Personnel Center in August 1978 showed that women transferred to traditional specialties at a rate of 59 percent, into less traditional specialties at a rate of 25 percent, and into nontraditional specialties at a rate of 14 percent. A similar study last year showed that women had a 30 percent higher tendency to transfer from their specialties than men. Hence the Army could not be certain enough women would be attracted to nontraditional occupations, nor enough would reenlist in those occupations to meet career force requirements.

Plans called for 80,000 enlisted women in the active Army and 50,000 women in the reserve components by the end of fiscal year 1983. New policies would have to be created to ensure that these women were employed fairly and effectively. The Army thus conducted a series of tests, data-collecting projects, studies, and evaluations on which to base decisions ensuring equitable and effective employment for women consistent with the Army's needs.

An Army Research Institute project known as MAX WAC analyzed the effects of varying the proportion of women soldiers from 0 to 35 percent of forty companies in five types of combat support and combat service support units (medical, maintenance, military police, signal, and transportation) during 72-

hour field exercises. Completed in October 1977, the study showed that for up to 35 percent of total strength, the number of women had no significant effect on the capability of a unit to perform its mission for short periods of time.

The Army Research Institute evaluated the performance of women soldiers during the REFORGER 77 exercise. A total of 229 enlisted women participated, up to 10 percent of the strength in certain maintenance, supply and transportation, signal, medical, and military police units. The REF-WAC 77 study was completed in March 1978. It found that women were highly proficient in both traditional and nontraditional women specialties, but were not trained as well in tactical skills as their male peers. It should be noted that none of these women had received the new common basic training. Although the women were not as well prepared as men for field duty, they adapted quickly and well. There were no significant differences in individual performance between men and women or in group performance between all-male and integrated units. Leadership and management problems were widespread and appeared to underlie most difficulties. There was considerable bias against women, especially among male noncommissioned officers. Reasons given most frequently were physical strength, the risk of exposing women to combat, and added problems in hygiene, sanitation, and billeting. The study concluded that women soldiers did not impair unit effectiveness during the exercise and that enlisted women could and did perform adequately for extended periods (up to one month) under field conditions.

The Comptroller of the Army conducted a comparative cost analysis of enlisted force structures with 50, 80, 100, and 150 thousand women. It indicated under the assumptions governing the analysis that higher proportions of women did not cause significantly higher or lower personnel costs. There were some indications, however, that cost might become a factor for force mixes containing a greater female content and/or requiring a longer period of time to mature than analyzed.

Another important study collected data comparing lost or nonproductive time for men and women soldiers. Based on an eight-hour day, men lost 3.3 hours and women 9.5 hours per month in the categories of absence without leave, confinement, drug and alcohol abuse, dependent responsibilities, medical problems, and pregnancy. When pregnancy was not considered women lost 6.5 hours per month, almost twice the time lost by men.

In December 1977 the Military Personnel Center completed

a study of the effect on Army personnel management of increased women accessions and end strengths of 60, 80, and 100 thousand. Data was insufficient to determine the optimum female force, but the study concluded that the impact would be most severe if the Army were required to enlist women quickly. A comprehensive review of programs and policies for women in the reserve components was conducted by the Office of the Deputy Chief of Staff for Personnel. It indicated that much work remained to be done before women strength objectives could be determined.

The Human Engineering Laboratory studied the impact of increasing numbers of women soldiers on Army equipment design. It demonstrated the need for further research. A historical review by the Center of Military History showed that through the ages and throughout the world women have performed remarkably well in combat and as military leaders.

Another major project, Evaluation of Women in the Army (EWITA), was conducted at the U.S. Army Administration Center at Fort Benjamin Harrison, Indiana. The final report was released in May 1978. It was quite controversial because some recommendations ran contrary to Army policy. The original purpose of the EWITA study was to determine how many women by specialty and grade could be assigned to an Army unit without reducing the unit's ability to accomplish its primary ground combat mission. The study group was unable to develop a methodology for setting limits to female participation in units.

On the basis of revised objectives, EWITA stated that certain officer and enlisted specialties should be closed to women while others should be opened. The first category included fourteen enlisted specialties recently opened to women which EWITA charged required physically demanding tasks beyond the average woman. The study recommended that the Army establish specific physical strength requirements for each specialty and develop standardized tests of the strength potential of enlistees.

The EWITA study found that officers and warrant officers in the field regarded pregnancy as the greatest impediment to full integration of women in the Army. During fiscal year 1977 15 percent of enlisted women on active duty became pregnant. Of these, 25 percent chose to leave the Army, 36 percent had abortions, and 39 percent carried to full term with an average time loss of twenty-one weeks. Many problems were associated with pregnancy, including reduced unit readiness, deployability, and morale. EWITA concluded that the Army's current pregnancy policy was not cost effective and suggested two alterna-

tives: involuntary separation or absence without pay. The study also called for reevaluating policies pertaining to sole parents and intraservice marriages, redefining unacceptable fraternization, improving coed housing overseas, and placing greater emphasis on human relations in leadership training.

In June 1978 the Secretary of the Army established an EWITA II team to reexamine unit and specialty openings and closings to women based on the 20 December 1977 combat exclusion policy. Meanwhile the Army kept working on physical strength requirements and tests for military skills and specialties. A seminar held in January 1978 to examine the leadership problems and challenges caused by increased numbers of women in the Army identified many of the same areas of concern as the EWITA study. Other evaluations completed this year did likewise. The most pressing issues were pregnancy and sole parenthood.

In June 1978 field commanders were asked to provide feedback on their experiences with women soldiers. They were requested to address pregnancy, sole parenthood, the assignment of intraservice married couples, fraternization, physical capabilities of women, training, leadership, housing, uniforms and equipment, and proper employment. Once again pregnancy and sole parenthood emerged as major areas of concern. They were reported to have negative effects on deployability, morale, operational readiness, field training, time on the job, military specialties, and harmonious relations among unit members. Many soldiers felt that pregnant women and sole parents received preferential treatment and did not perform a fair share of various duties. The Army has been aware of this situation for some time and has taken a number of actions to alleviate it.

Starting in November 1977 commanders were required to advise pregnant soldiers of their option to remain in the service or be discharged and to explain their entitlements and responsibilities. The primary purpose of this counseling was to allow the pregnant woman to make an intelligent decision without pressuring her to be discharged.

While pregnancy is restricted to women, sole parenthood is not. Although a higher percentage of women soldiers are sole parents, there are more male than female sole parents in the Army. In fiscal year 1978 about 2 percent of the active force and 4 percent of reserve component personnel were sole parents. Effective 1 May 1978, dependent care counseling was required for all personnel, male and female, with three years or less service, who were sole parents or married to another service

member and had dependents. Commanders directed these soldiers to arrange for the care of their dependents so they could perform their military duties without interference and remain eligible for worldwide assignment. The Army advised commanders to stress that no special consideration would be given in duty assignments or stations solely on the basis of responsibility for dependents.

The Army changed the regulations pertaining to pregnant officers in May 1978. Regular Army officers must complete at least three years of active military service before they can submit resignations for reasons of pregnancy. All pregnant officers will be counseled by their commanders, whether they plan to remain in the service or resign their commission. The officer who wishes to remain on active duty will have to outline a plan for the physical and financial care of the child and make arrangements for child care during duty hours. Although commanders generally considered the new counseling policies effective, pregnancy and sole parenthood were still major problems, and further studies were under way at the end of the fiscal year.

Nevertheless, Army leaders concluded that women provide meaningful contributions to the all-volunteer Army. As the Deputy Chief of Staff for Personnel stated: "It is important to note that the great majority of the women serving in the Army today are doing so with skill, intelligence, energy, excellent discipline, and genuine commitment."

Civilian Personnel

The civilian work force is an integral part of the total Army. In peacetime civilian personnel perform many support functions, ranging from essential daily tasks to advanced scientific research, thus enabling soldiers to concentrate on the development of military skills. Civilians also provide continuity of operations which would be particularly important in the event of mobilization.

The Army's civilian personnel strength remained virtually unchanged during fiscal year 1978. There were 405,000 employees; 334,000 were U.S. citizens and 71,000 were foreign nationals employed overseas. The Secretary of Defense directed the use of attrition rather than reduction-in-force procedures to meet local manpower reductions. This policy created skill imbalances in the civilian work force and a minor increase in borrowed military manpower for support tasks.

The Department of Defense Appropriations Authorization Act for fiscal year 1978 required a 6 percent reduction in De-

fense employees at grades GS–13 and above by the end of fiscal year 1980. The Secretary of Defense directed the Army to reduce personnel strength at these grade levels by 2 percent this year. Although the Army succeeded, high grade reductions will present severe problems in the years to come. The Army is employing large numbers of civilian physicians to compensate for the shortage caused by the end of the draft. It is sending several high-grade civilian employees to Saudi Arabia to supervise military construction projects financed by the Saudi Arabian government. Other Army activities thus have to absorb disproportionate shares of the reductions, a trend which threatens to impair operations. The Army requested the Secretary of Defense to exempt civilian employees in Saudi Arabia and civilian physicians from the reduction or to eliminate it entirely. It was turned down on both counts.

During fiscal year 1978 the proportion of minorities and women in the civilian work force increased to 18.4 and 34.7 percent, respectively. In grades GS–12 and above, however, there were increases of 7.7 percent for women and 4.7 percent for minorities; the overall increase was only 0.2 percent. Recruiting women and minorities for career intern programs remained a high priority. This year 40.1 percent of interns entering career programs outside engineering and science were women, surpassing the 33 percent goal. But only 10.8 percent were members of minorities, compared to an objective of 17 percent. Of those entering engineering and science career programs, 11.5 percent were members of minorities, exceeding the 10 percent goal, and 8.6 percent were women. Thus the Army failed to reach some affirmative action goals and surpassed others. The overall achievements were encouraging.

The Secretary of the Army's Mobility, Opportunity, and Development Program promises to improve upward mobility for civilian employees. The program began testing in March 1978. It features practical, flexible techniques for selecting and training individuals of high potential who might be overlooked with conventional recruiting methods. Rather than selecting trainees on the basis of standardized tests, the program considers self-ratings, education and training, work experience, civic activities, and other areas of self-development. Entry grades reflect the level of development, ranging from GS–4 to GS–12. Trainees are exposed to a wide variety of work. The program should prepare its graduates for more responsible, higher paying jobs. It should also improve the career opportunities of talented women, members of minorities, and handicapped persons.

This year the Army hired 7,163 Vietnam-era veterans and 1,949 disabled veterans, representing 8.6 and 2.3 percent, respectively, of total civilian accessions. Of newly hired employees, 3,086, or 3.7 percent, were handicapped. Many architectural barriers to the handicapped were removed from Army facilities. The Army's 1978 summer employment program gave jobs to 12,821 youths, including 6,983 from economically disadvantaged families. In addition, the Army provided unpaid work experience and training opportunities for about 2,500 individuals under federal grant programs.

Union representation in the Army's civilian work force declined for the second consecutive year. The number of employees covered by exclusive recognition decreased from 228,584 in 719 bargaining units to 223,012 in 686 bargaining units. The decline in the personnel covered was probably a consequence of various reorganizations and reductions that occurred in late fiscal year 1977 and early fiscal year 1978. The decrease in units reflects union efforts to consolidate.

The Army's first nationwide collective bargaining agreement, between the National Maritime Engineers Beneficial Association and the Corps of Engineers, was negotiated and approved this year. The agreement covered 188 licensed marine engineers employed by the corps. In order to familiarize commanders and other top level management officials with the federal labor relations program, the Army developed a course for executives. Forty-two military and civilian personnel, including six general officers, attended the pilot course in September 1978.

To improve the management of its civilian work force, the Army authorized the establishment of a new agency comparable to the Military Personnel Center established in 1973. Effective 1 October 1978, the U.S. Army Civilian Personnel Center will consolidate the functions, personnel, and equipment of the Civilian Personnel Field Operations Agency and Civilian Career Management Field Agency. As a field operating agency under the Deputy Chief of Staff for Personnel, it will provide one-stop service to commands and installations on all operational civilian personnel functions centralized at Headquarters, Department of the Army. It will also evaluate civilian personnel management in the field.

The standard civilian personnel management information system was designed to support local civilian personnel offices in their day-to-day operations while feeding selected information to a central data bank in Washington, D.C. This new system standardized automated installation reporting systems, sending

uniform reports to the central data file. It eliminated redundant reporting and produced more reliable information. By the end of the fiscal year the system was in operation at eighty-one installations in the continental United States and eight installations overseas. Plans for expanding the system included broadening the data base supporting civilian career management and equal employment opportunity programs.

The Army encourages its personnel to submit money-saving suggestions. An outstanding result this year was a laboratory simulation method for fatigue-testing large gun barrels developed by a team of twelve civilian scientists at Watervliet Arsenal in New York. This technique eliminated most of the costly test firing conducted on proving grounds. According to the Army Audit Agency, first-year savings were over $30 million. The U.S. Navy and the armed forces of the Federal Republic of Germany have adopted the new method. In a special ceremony on 20 July 1978 the Secretary of Defense and the Secretary of the Army presented the Watervliet team with a group award of $25,000, the largest authorized by law, and each member received a letter of congratulation signed by President Carter.

On 28 October 1977 the Secretary of the Army and the Chief of Staff presented awards for exceptional service and outstanding achievement to ten civilian employees. This annual ceremony recognizes individuals exemplifying the highest standards of professionalism. It is an important part of the Army's incentive awards program. Local ceremonies honoring civilian personnel took place throughout the Army, and many installations held special civilian recognition days. For example, in April the first Commander's Award for Civilian Service was presented at a civilian day ceremony at Fort Riley, Kansas.

6. Reserve Forces

Organizing and training citizen soldiers during peacetime for wartime contingencies has been a recurring theme in U.S. military policy since passage of the Militia Act of 1792. In fiscal year 1978 the Army's total force plan relied on the Selected Reserve of the Army National Guard and the Army Reserve for 37 percent of its aviation forces, 49 percent of its special forces groups, 52 percent of its infantry and armor battalions, 57 percent of its field artillery battalions, 65 percent of its combat engineer battalions, and 67 percent of its tactical support forces.

Developing the readiness of the Selected Reserve for efficient mobilization and early deployment was hampered by the inability of the reserve components to attract sufficient numbers of men and women to join its troop program units, critical strength shortfalls in the Individual Ready Reserve, and a lack of training equipment.

Force Structure

Changes in the structure of the reserve components reflected the requirements of the Total Army Analysis, an annual computer-assisted force-structuring process begun in 1975 that lists the units needed in each of the Army's components to meet the national defense strategy. In the last three fiscal years changes have been extensive: 435 activations and 347 inactivations in the Army Reserve; 113 activations and 91 inactivations in the Army National Guard. The bulk of the force realignments required by the Total Army Analysis have already been accomplished. In the coming year only thirty activations and thirty-nine inactivations are programmed for the Army Reserve, with twenty-three activations and twenty-four inactivations for the Army National Guard. This is well within the goal of limiting the number of changes in the reserve components to no more than 2 percent annually, thus reducing turbulence.

During the past year the Army National Guard began modifying its aviation assets in accordance with the Aviation Requirements for the Combat Structure of the Army plan. The goal is to distribute aircraft among divisions and armored cavalry regiments, with relatively few placed at corps or army level. To minimize turbulence, losses and gains in aviation assets were planned to take advantage of existing facilities and units. In a

related development, the aviation section of field artillery groups was eliminated.

Late in the fiscal year all field artillery groups in the Army National Guard were redesignated field artillery brigades. To incorporate fire support team doctrine in the troop program, the guard added brigade and maneuver battalion fire support sections to the headquarters of field artillery battalions with a direct support mission and, within the battalion headquarters battery, a fire support team for each infantry and armored company in the organization.

The Army National Guard reviewed modified table of organization and equipment documents to identify personnel and equipment not essential to unit missions and began forming table of distribution units in each state to manage these assets and provide administrative support and control for separate, nonorganic units. Realignment of the guard's last tristate division, the 47th Infantry Division, to a bistate configuration, had not been completed by the close of the fiscal year.

As of 30 September 1978, the Army National Guard contained 3,355 units. The organizations in the structure were:

5 Infantry divisions	1 Infantry group (Artic reconnaissance)
1 Mechanized infantry division	2 Special forces groups
2 Armored divisions	126 Separate battalions
17 Separate brigades	18 Hospitals
4 Divisional brigades (roundout)	724 Other company and detachment-size units
4 Armored cavalry regiments	

During fiscal year 1978 the Army Reserve accomplished twenty-three unit activations, twenty-two inactivations, and forty-one conversions. Activation of forty-nine team and detachment size units was postponed until questions were resolved on command and control, mobilization needs, and administrative support.

At the close of the fiscal year the Army Reserve contained approximately 3,200 units of company or detachment size. The major organizations were as follows:

19 USA reserve commands	2 Transportation brigades
12 Divisions (training)	3 Military police brigades
2 Maneuver area commands	2 Engineer brigades
2 Engineer commands	2 Support brigades
1 Military police command	2 Medical brigades
1 Theater army area command	4 Hospital centers
3 Civil affairs commands	1 Corps support command
9 Maneuver training commands	3 Hospital commands
1 Infantry brigade	104 Hospitals (miscellaneous)
1 Infantry brigade (mech)	63 Separate battalions
1 Infantry brigade (light)	

Strength

Despite 104,000 enlistments and 113,000 reenlistments in fiscal year 1977, Army National Guard strength continued declining. Including enlistees without previous military service who were ineligible for pay before starting basic training, assigned strength was 347,340 as of 30 September 1978, or 84.1 percent of authorized strength. Assigned strength a year earlier was 363,777. Paid drill strength was 340,996, compared to 354,706 a year earlier.

Much of the decline was attributed to the departure of draft-induced volunteers who had completed their six-year military obligation. However, 50.3 percent of the year's losses involved personnel with incomplete terms of service. Principal causes were incompatible civilian occupations, personnel moves, failure to meet enlistment standards, loss of recruits during initial active duty training, and unsatisfactory participation. A number of steps were taken to reduce such losses. Screening procedures for enlistees were improved, the use of Armed Forces Examining and Entrance Stations was expanded, National Guard guidance counselors were assigned to these stations, and the role of National Guard liaison personnel in training bases was increased to help trainees with problems. Also, detailed comparative data on attrition losses were furnished each state.

Minimum quality enlistment standards, which permit not more than 18 percent in mental category IV and not more than 45 percent of those who have not graduated from high school, were maintained. More significant, the National Guard increased the enlistment percentage of category I personnel and decreased the number in category IV. The ratio of enlistments of nonprior service personnel to prior service personnel continued moving in a favorable direction. By 30 September 1978 the ratio was 45 to 55, well toward the 1981 goal of 50 to 50.

Inactive Army National Guard strength rose to 2,275 by the end of fiscal year 1978, compared to 1,629 a year earlier. Members were attached to units for administrative and accounting purposes and would be available for mobilization.

Recruiting for the Army Reserve also met with success. This was due in large measure to an increase in experienced, full-time recruiters. Enlisted accessions, 52,766 in fiscal year 1977, rose to 52,869 at the close of the current fiscal year. Army Reserve drill pay strength dropped from 189,420 at the end of fiscal year 1977 to 185,753 on 30 September 1978. A high attrition rate hampered the potential for achieving a stable force.

Individual Ready Reserve strength rebounded from an all-

time low of 143,882 in January 1978 to 168,607 at the close of the fiscal year, a gain of 24,725. The turnabout was made possible by a policy change begun in the spring. The Army stopped automatically transferring Individual Ready Reserve members to the Standby Reserve as they entered the final year of their six-year military obligation. Such transfers were made only upon a reservist's request. The Individual Ready Reserve remained far short of mobilization requirements of 450,000 individuals for fillers and casualty replacements. To improve this situation the Army worked on a test program for direct enlistment of individuals with no prior military service.

The strength of the Standby Reserve fell to 82,677 by 30 September 1978, compared to 152,784 on 31 September 1977. Retired Reserve strength rose from 386,368 to 391,304 during the same period. Major commands began reviewing their mobilization table of distribution authorizations for positions that might be filled by retirees rather than ready reservists. The Reserve Components Personnel Administration Center assisted this effort by providing data on personnel who have retired in the past five years.

As noted in last year's report, the Army developed a set of proposals to help solve Army Reserve and National Guard manpower shortages and to improve training and readiness. Legislative initiatives to increase the attractiveness of service were included, such as education assistance, enlistment and reenlistment bonuses, income tax exemptions, and insurance coverage. The Army transmitted the proposals, which formed the Reserve Revitalization Act of 1977 to the Office, Secretary of Defense, last year. The proposal has not been relayed to Congress, and further action is not expected until Defense studies on training and compensation have been evaluated, and other measures to solve the mobilization manpower issue can be determined.

The reserve compensation system study, which was completed on 30 June 1978, addressed three major areas: reserve pay, differential pay (bonuses and education assistance), and deferred compensation (retirement). The study generally supported a shift in compensation favoring newer and lower-grade members of reserve components. While supporting selective enlistment and reenlistment bonuses, the study advised reducing drill pay and reducing or eliminating retired pay. The Army objected to drill pay reductions and the study recommendations related to retirement, opting instead for a system of compensation compatible with the system used in the active forces.

Although a comprehensive program offering monetary inducements to promote enlistments and reenlistments in the reserve components has yet to be enacted, in 1977 Congress approved a reenlistment bonus test which the Army Reserve and Army National Guard conducted from 1 January to 30 September 1978. Members who were eligible for the bonus received an initial $900 for a six-year reenlistment and annual payments of $150 for satisfactory service, or $450 for a three-year enlistment and annual payments of $150 for satisfactory service. Of the 1,399 eligible Army Reserve members, 753, or 54 percent, reenlisted, 248 for three years and 505 for six years. In the National Guard test population, reenlistments increased more than 25 percent. In control states offering no bonus, only one percent of reenlistments were for six years, compared to 61.3 percent in test states.

Another recruiting test, the Militia Careers Program, began at the end of the fiscal year. Sponsored by the Reserve Officers Association, the Pennsylvania Army National Guard, the 99th Army Reserve Command, and four vocational-technical schools in southwest Pennsylvania, the program was designed to recruit high school seniors for vacancies in local reserve component units. Unlike others entering the reserve with no prior military service, recruits would be awarded a military occupational specialty based on their vocational skills, be paid from the time of their enlistment, and participate in unit training before initial active duty training. When they graduated from high school, Militia Careers Program enlistees would perform active duty to complete basic training and any individual training required for their military occupational specialty.

During fiscal year 1978 Congress authorized the Army National Guard and Army Reserve to conduct a split-training program permitting enlistees to take basic training one summer and advanced individual training the following summer. It was directed toward students and seasonal workers who lack the time for uninterrupted training.

The U.S. Army Recruiting Command joined the Army Reserve in promoting recruitment in a program that commenced in November 1977 at ten district recruiting commands. It expanded to three additional districts in June of this year. In July the Army approved a plan to expand the program to the remaining forty-four district recruiting commands by May 1979. The Recruiting Command will then have full responsibility for Army Reserve recruitment.

The Army National Guard continued moving toward a

trained, full-time recruiting force. The National Guard worked closely with the Army Recruiting Command, setting up a mutual referral program, sharing recruiting techniques, and placing guard recruiters at Army recruiting stations where space was available.

The National Guard took a number of actions to increase the number of ROTC graduates entering its ranks as junior officers. It widened its advertising efforts, interviewed ROTC cadets at summer camp, briefed military science professors at conferences, established an ROTC management section in the National Guard Bureau, and approved a company-grade overstrength of twenty-five percent to place the maximum number of ROTC graduates in unit vacancies.

Efforts to raise attendance at state officer candidate schools included equalizing male and female entrance prerequisites so that more females could qualify and using a computer to identify qualified guard members. The guard hoped to increase enrollment from 3,000 in fiscal year 1978 to 4,000 by fiscal year 1980.

Twenty-five National Guard members on full-time duty counseled soldiers leaving the Army on the advantages of joining the guard. Full-time career counselors were assigned to sixteen battalions in four states in a test to improve retention. If the test is successful, the Army will seek funding to fill the 732 authorized full-time career counseling positions.

Minority strength in the Army Reserve did not change significantly during fiscal year 1978. The Army National Guard made gains toward its goal of having all units reflect the social and ethnic character of their community. At the end of the year Army National Guard minority strength was 90,040, 25.9 percent of its assigned strength. This included 2,068 officers, 300 warrant officers, and 87,672 enlisted personnel. The guard was launching a special program to raise the number of minority officers.

The Army National Guard and the Army Reserve pursued programs to increase the number of women in their enlisted and officer ranks. The guard had problems retaining its women members; the reserve had problems getting women to enlist. A review of the situation was sponsored by the Deputy Assistant Secretary of the Army for Reserve Affairs and completed in March. It identified problems and issues and made recommendations. The review was the first to address Army policies and practices as they apply to women in the Army National Guard and the Army Reserve.

A group formed in May 1977 to study full-time training and

administration of the Selected Reserve completed its work. The group concluded that the cost difference between a military support force and one manned by technicians was not significant enough to justify a change in the current system, and that the excepted civil service status of the National Guard technician was more advantageous than the competitive civil service status of the Army Reserve technician for Selected Reserve units.

The National Guard Bureau completed a study on technician/military compatibility for all Army National Guard technician positions. In follow-up actions, the National Guard Bureau issued up-to-date compatibility criteria for technician positions, began a project to develop new qualification standards for all National Guard technician positions, and developed standardized guidance for both excepted and competitive merit placement programs.

In fiscal year 1978, Army National Guard technician requirements were 33,882; in 1977 they were 32,369. Authorized technician strength was 28,374, or 84 percent of requirements.

Traditionally the ratio of full-time technician personnel to drill participants has been lower in the Army Reserve than in the Army National Guard. In 1978 it was 1:23 compared to 1:13. The number of Army Reserve technicians at the close of fiscal year 1978 was 8,109; there were 8,622 on 30 September 1977. The number of technicians required to properly support the force this coming year was set at 10,600, 500 more than for 1978. The Army sought to raise the number of technicians authorized for the Army Reserve to 8,860, an increase of 310 over fiscal year 1978.

Personnel Management

The difficulty of maintaining reserve component strength in an all-volunteer Army placed an ever greater importance on efficient management of personnel resources. Improving the management of the Selected Reserve and the Individual Ready Reserve has long concerned the Army, but interest in retirees has received almost no attention since the early 1940's, when limited numbers of retirees were screened for service in World War II.

The Reserve Component Personnel Administration Center (RCPAC) held the military service records of approximately 230,000 Regular Army retirees. However, except for enlisted personnel who retired with less than thirty years of active service, the information entered in the RCPAC computer was limited to the retiree's component, social security number, sex, and

whether the retiree was an officer, warrant officer, or enlisted person. Not until August 1977 did the center begin entering mobilization data from all incoming records.

Since the 1960's RCPAC has been developing a computerized file on retired reservists and Regular Army enlisted personnel with less than thirty years of active service who have been placed in the retired reserve control group. By the fall of 1978 the file contained data on some 392,000 retirees.

RCPAC and the Army Finance Center began matching computer tapes as a first step in placing retirees in three groups: (1) individuals who have retired in the last five years, meet age and grade criteria for mobilization, and did not retire by reason of disability; (2) individuals who have been in a retired status for more than five years, meet age and grade criteria for mobilization, and did not retire by reason of disability; and (3) individuals who have retired for reason of disability or do not meet age or grade criteria. A more laborious task will be examining records, particularly on Regular Army personnel, to fill information gaps on the computer tapes. RCPAC planned to contact retirees twice a year to verify addresses, physical status, and civilian occupations. It also planned to match retirees against modified tables of distribution authorizations for placement upon mobilization.

RCPAC expected to have category 1 personnel under management during the first quarter of fiscal year 1979, thereby creating a resource pool of some 110,000 individuals who have retired since August 1974.

The Army terminated the voluntary mobilization preassignment program on 31 December 1977. By the close of fiscal year 1978, 5,448 volunteer reservists were still preassigned. During the program's twenty-one months, 32,505 individuals, of whom 17,270 were deemed ineligible, volunteered for 16,552 vacancies.

To replace the voluntary program the Army developed a mobilization preassignment plan. Its aim is to ensure the quick supply of personnel needed to bring active and reserve component early deploying units to wartime strength, staff mobilization stations, and meet overseas replacement requirements. Personnel separated from active service with a reserve obligation would receive preassignment orders through an RCPAC-linked computer at the separation station. Current Individual Ready Reserve members would be screened by RCPAC and given their orders. Individual mobilization orders would become effective upon announcement of a full mobilization through the news media. Although earmarked for specific unit assignment, the

reservist would be preassigned to the garrison of the station at which the early deploying unit or overseas replacement activity he or she is to join is mobilized.

Testing of the mobilization preassignment program was begun at RCPAC and selected Army separation stations, and was expected to be completed early in fiscal year 1979. Preliminary test results indicate that the program could match individuals with identified mobilization requirements upon their release from active duty.

In a closely related action, the mobilization personnel system was designed and developed during fiscal year 1978 to overcome deficiencies in the mobilization of reserve component personnel uncovered in the 1976 mobilization exercise. More comprehensive in scope than the mobilization preassignment plan, which deals primarily with early deploying units, it involves the total management of reserve component personnel resources for mobilization. The U.S. Army Military Personnel Center would be charged with computing personnel requirements that could not be met within the active Army, while RCPAC would compute the filler needs of reserve component units. RCPAC would then select Individual Ready Reserve members to meet active and reserve component requirements and assign them to the appropriate mobilization station. In addition, RCPAC would create a data accession file on all mobilized reserve component personnel (those in units as well as individuals) which would be placed at mobilization stations and updated on a monthly basis. The mobilization personnel system was scheduled for testing early in fiscal year 1979.

The Army Reserve completed the second phase of a program to bring its officers under the officer personnel management system, thus raising the total number of officers under intensive personalized management to 46,000. The remaining 35,000 officers are expected to be brought into the system during fiscal year 1979, a year ahead of the schedule indicated in last year's report. Extension of the system to additional Army National Guard officers was hindered by manpower shortages.

On 10 September 1978 the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics) approved an expeditious discharge program for the reserve components which closely parallels the program used in the active Army. It applies to all nonprior service Army National Guard and Army Reserve troop program unit enlisted personnel who have completed at least six but not more than thirty-six months of continuous unit service on their first enlistment. The program provides a quick,

simple means of discharging substandard, nonproductive members. It will not be used as a substitute for other appropriate administrative action or to separate members with a potential for rehabilitation. No member will be discharged without his consent. Members discharged under the program will be issued either an honorable or general discharge, as warranted. On 25 September appropriate congressional committees were informed of the Army's plan to carry out the program. Barring objection by one or more of the committees, it will become effective on 1 November 1978.

The pilot phase of the enlisted personnel management system, initiated in fiscal year 1978, has brought 5,000 members of the Individual Ready Reserve under personalized management. System requirements for the automated reserve manpower program were approved, and a development contract was awarded. The standard installations division personnel system for both the Army Reserve and the Army National Guard continued.

Equipment and Maintenance

During the past year efforts to raise the logistical readiness of reserve component units were hampered because modern tactical equipment from battalion- and company-size units was diverted to Europe as prepositioned wartime stocks. Equipment shortages inhibited training and remained the major factor in the failure of reserve component units to meet the required degree of readiness.

The Army Reserve improved its logistical readiness despite serious shortages in communications-electronics, Army Security Agency, and data processing equipment. Equipment expenditures from procurement appropriations totaled $67,518,313. Of this, $35,431,839, or 52 percent, went to mobility equipment, and $14,478,806, or 21 percent, went to troop support items.

The following table represents Army Reserve equipment assets at the close of fiscal year 1978. Less than one percent of the total dollar value stands for nondeployable assets.

Equipment level	Quantity	Dollar value (millions)	Percent-on-hand Quantity	Value
Requirement (mobilization)	1,053,220	$1,939.4	75	62
Authorization (training)	982,896	1,945.5	80	62
On-hand assets	789,982	1,206.0		

The Army National Guard faced critical equipment shortages, particularly in communications and electronics, such as area communications items, tactical radios, and radar sets. Nevertheless, the Army National Guard improved its logistical

readiness. By the close of the fiscal year 50 percent of the guard's affiliated and early deploying units met or exceeded established goals.

The overall equipment status of the Army National Guard at the end of fiscal year 1978 is reflected in the following chart.

Equipment level	Dollar value (millions)
Requirement (mobilization)	$6,731
Authorization (training)	6,291
On-hand assets (all inclusive)	4,723
On-hand assets (standard only)	4,574
Percent fill (mobilization) all assets	70
standard assets	68
Percent fill (training) all assets	75
standard assets	73

The Army National Guard improved equipment maintenance. This was due in large part to greater availability of repair parts, expansion of mechanized supply operations at the unit level, better management, improvements in maintenance procedures, increased involvement of unit personnel in maintenance activities, and the emphasis placed on maintenance as a command responsibility with requirements clearly defined at all levels.

The Army took a number of actions during the past year to promote cooperative maintenance activities, increase efficiency, and reduce costs. It was guided by the final report of the Army Logistics Evaluation Agency study—Improved Maintenance Support Among Army, Army National Guard and U.S. Army Reserve—which was published in May 1977. Some of the measures the report recommended were working out a memorandum of understanding on intraservice support agreements by the National Guard Bureau, TRADOC, and FORSCOM; carrying out agreements for Army National Guard equipment support at Fort Bliss, Texas; maintaining guard communication security and chemical equipment at active Army installations on a job order basis; executing agreements between the Army National Guard and the Army Reserve for the guard to service selected reserve equipment in Mississippi, Alabama, Georgia, and New York; and paving the way for the Army Reserve to take over the support functions of the active Army's maintenance facility at Neville Island, Pennsylvania, which could then be closed. Also, FORSCOM was preparing a detailed plan for improved maintenance support of Army Reserve equipment.

Facilities

In fiscal year 1978 new obligation authority for the Army Reserve military construction program amounted to $51.2 mil-

lion, $2.6 million less than last year. Carry-over funds of $16.3 million from previous programs brought the total available for obligation to $67.5 million. Of this amount $36.3 was obligated, leaving $31.1 in carry-over funds for fiscal year 1979.

The Army Reserve construction backlog at the close of fiscal year 1978 was $715 million, compared to $338.4 million seven years earlier. The increase was due to rising costs, maintenance and storage facilities for new equipment, additional training and troop support facilities at weekend and annual training sites, and increased home station construction requirements. Guidance covering programing for the next five years did not allow reduction of the backlog, nor maintenance of facilities at fiscal year 1978 levels, although 60 percent were considered inadequate. The Army had long-range plans for replacing inadequate facilities and expanding others to meet space requirements, but there was growing skepticism that funds would ever become available to make these plans a reality.

The Army National Guard military construction program received $49.4 million in new obligational authority in fiscal year 1978, $11.7 million less than in 1977. Another $6.8 million in carry-over funds brought the amount available to $56.2 million. Obligations for the year totaled $52.0 million, or 93 percent of the amount available. During the year contracts were awarded for 158 projects; 96 were major and 62 were minor. The major projects cost $44 million. Forty-one were for armories.

During the year the backlog of Army National Guard construction projects increased by $86 million to $672 million: $339 million for armory replacement, additions, alterations, or rehabilitation (624 of the guard's 2,799 armories were considered inadequate); $97 million to bring 203 of 1,846 administrative and logistical facilities up to acceptable standards; $160 million for 106 projects at Army National Guard training sites; and $76 million for minor construction and planning.

Training and Readiness

Hampered by strength and equipment problems which were preventing the reserve components from making significant gains in overall readiness, the Army increased its efforts during the past year to improve training readiness within the Army National Guard and the Army Reserve.

At the forefront of the effort to raise training readiness was the additional full-time training and readiness manning program. On 1 January 1978 a one-year test began of using full-time readiness specialists to improve reserve component capabilities.

Two-hundred-forty-three noncommissioned officers (146 guardsmen and 97 reservists) in the grade of E–6 or E–7 were assigned to units of battalion or company size. Their job was to manage training and assist in planning.

There was some difficulty in attracting specialists to the program due to its transitory nature. However, the test got off to a good start, and the Army was optimistic that the specialists would improve training, permit unit commanders to devote more attention to other problems, and promote higher retention through better use of troop training time.

The new gaining command program will establish a tentative wartime assignment for early deploying active Army and reserve component units, assignment to a USAREUR corps or communications zone headquarters. Divisions, separate combat brigades, and armored cavalry regiments are excluded from the plan. Scheduled to go into effect in fiscal year 1979, the program will encourage planning between participating units and installations, including the exchange of standing operating procedures and personal communications between commanders and staffs. It will ease the transition from peace to war, and impart a sense of urgency among reserve component participants by stressing their probable wartime roles and providing increased benefits for units that train overseas with the gaining commands. It will not change peacetime chains of command or administration, nor alter existing training and readiness responsibilities.

Reserve component training with overseas commands is a major tool in carrying out the gaining command program. Plans were developed to expand overseas training so that, beginning in fiscal year 1979, reserve component units scheduled for deployment during the first thirty days of war would train in Europe approximately once every three years. During fiscal year 1978 seventy reserve component units (38 ARNG and 32 USAR) trained with overseas commands. The participation of four Army National Guard and two Army Reserve combat units marked the first time that combat-type units were involved. Three guard units also trained overseas as part of an exchange program involving the 47th Infantry Division with units of the Norwegian Home Guard and Pennsylvania and Ohio National Guard units with the British Territorial Army Volunteer Reserves. Another thirteen Army National Guard units from ten states participated in an interstate exchange program to gain training experience in new environments under varying command structures.

Close cooperation among all the Army's components was an

important feature of the affiliation program, which was begun in 1974 as an offshoot of the roundout program. During fiscal year 1978 the affiliation program linked eighty Army National Guard and sixteen Army Reserve battalion-size units and one Army Reserve engineer company with active Army units to give the reserve component members year-round training and operational assistance. The expansion of the program to include approximately seventy early deploying company- and detachment-size units was deferred to fiscal year 1979 when between seventy and one hundred such units are expected to be added to the program.

Another continuing cooperative venture was the mutual support program. The commanders of active Army and reserve component units, usually in adjacent geographical areas, were encouraged or directed to join forces for training and other projects. This nonfunded program continued to pay tangible dividends in improved readiness, better understanding, and improved utilization of training facilities and resources.

The active component battalion task force support during the annual training program was expanded so that by the close of the fiscal year all major nonaffiliated reserve component divisions were receiving support. Planning was completed for the division partnership program. It will begin early in fiscal year 1979. The initial phase of the program will pair the 40th Infantry Division (Mech), California Army National Guard, with the 4th Infantry Division, Fort Carson, Colorado; and the 49th Armored Division, Texas Army National Guard, with the III Corps, Fort Hood, Texas, and its two armored divisions—the 1st Cavalry Division and 2d Armored Division.

Reserve component specialized training included greater participation in such major joint readiness exercises as BOLD EAGLE in the southeast, BRAVE SHIELD in the southwest, REFORGER in Europe, FOAL EAGLE in Korea, and EMPIRE GLACIER. Two Army National Guard divisions and combat service support elements from both the Army National Guard and the Army Reserve participated in LOGEX–78, a command post exercise coordinated by the Joint Chiefs of Staff and conducted at Fort Pickett, Virginia, 13–26 August 1978. For the first time in four years this annual test of the Army's logistical capability was based on a European scenario.

Extensive preparations were made during the year for NIFTY NUGGET/MOBEX 78, which was to be conducted early in fiscal year 1979. It will test the Army's ability to mobilize and deploy the forces required to support NATO during the first

thirty days of a conventional war. NIFTY NUGGET/MOBEX 78 will also evaluate measures taken to correct mobilization deficiencies noted in MOBEX–76, including problems in requisitioning fillers from the Individual Ready Reserve and calling reserve component units and personnel to active duty.

Since the Standby Reserve is to be included in the exercise, new procedures were tested and evaluated to enable the Selective Service System to determine what portion of the Standby Reserve would be available for use in mobilization. The Director, Selective Service System, and Commander, Reserve Component Personnel and Administration Center, signed a memorandum of understanding in June 1978 for testing the procedures. The center will use the results during MOBEX–78 to evaluate Standby Reserve requirements, assets, and shortages.

A relatively small-scale test of mobilization capabilities within the Army National Guard involved three company-size units. They engaged in an exercise that evaluated their ability to prepare for overseas movement and prepare replacements for overseas movement. The results indicated that direct deployment to Europe was possible for company-size units with a high degree of readiness if special support were provided, that considerable effort on the part of the unit to be deployed would be required, and that some requirements were redundant and outdated.

In other training developments, the Army National Guard increased the use of computer-assisted training aids, such as the combined arms tactical training simulator and the map maneuver system. Gains were made in extending the Skill Qualification Test program to the reserve components. Development moved forward on automation techniques to determine training requirements for newly enlisted reservists. Finally, there was progress in bringing the noncommissioned officer education system to the Army Reserve.

Support to Civil Authorities

During fiscal year 1978 the Army National Guard fulfilled its role as the organized militia by responding 291 times to emergency conditions in forty-seven states. This involved a total of 31,466 guard personnel and 191,231 man-days.

National Guard personnel were placed on state active duty twenty-two times to help civil authorities control civil disturbances. Incidents in twelve states included twelve strikes and one prison riot and involved 5,970 guard personnel. Guard units conducted up to twenty hours of refresher training in civil disturbance control operations.

During fiscal year 1978, 25,496 Army National Guard personnel assisted civil authorities during 269 emergencies in forty-seven states. Natural disasters accounted for 116 of the calls. Fifteen were forest fires, forty-five were snow and ice storms, forty-six were floods, and ten were tornados. There were also thirty-nine searches and rescues, twenty-eight water hauls, twenty-seven medical evacuations, thirteen support missions, and four security missions. Traffic control, chemical spills, power failures, train derailments, and providing emergency shelters accounted for the remaining twenty-two emergencies.

7. Organization and Management

Organization

Improving management of the Army's limited personnel, dollar, and other resources remained the primary objective of all changes in the Army's organization. The programs referred to below were continuations of programs begun in previous years. Many concerned aspects of personnel management discussed in the last chapter.

One change was part of the Army plan to abolish the Women's Army Corp as a separate branch of the service. Three years ago Congress was requested to pass the necessary legislation, but it has so far failed to act. For all practical purposes, however, the Women's Army Corps no longer exists. Consequently, in April of this year the Chief of Staff eliminated the positions of the Director and Deputy Director of the Women's Army Corps and the Office, Director of the Women's Army Corps.

Legislation passed in 1912 restricted Army and Air Force officers below the grade of general to four-year assignments in secretariat, general, and special staff positions. No such restrictions existed for Navy or Marine Corps officers, enlisted personnel, or civilians. The Department of the Army asked Congress to eliminate these restrictions on the grounds that such matters should be left to the discretion of responsible managers. Thus far Congress has not acted.

The consolidation of personnel management and the consolidation of responsibility for Army training resulted from an intensive study of Army resource management. Base realignments studies and the restructuring of the Army's Materiel Development and Readiness Command, both begun in 1976, were completed this year, and additional base realignment studies were initiated.

The study begun last year on integrating Army headquarters management of command and control, computers, and communications (C^4) was completed. In March the results were submitted to a C^4 Action Planning Conference composed of representatives from the principal Army staff agencies. Vice Chief of Staff General Kerwin approved two of its recommendations: that automation and communications management be consolidated at Army headquarters; and that command and

control management stay separate from automation and communications management, remaining under the Deputy Chief of Staff for Operations and Plans.

General Kerwin directed further study of another conference recommendation to create a new Assistant Chief of Staff for Automation and Communications. The solution approved by the Army staff's Select Committee, the Chief of Staff, and the Secretary of the Army was to establish the office of Assistant Chief of Staff for Automation and Communications and to abolish the DCSOPS Directorate of Telecommunications Command and Control and the Directorate of Army Automation in the chief of staff's office. These changes became effective on 1 October 1978.

Last year the Chief of Staff ordered a special resource management study group under Director of Management Maj. Gen. Thomas U. Greer to investigate ways of improving the management of the Army's limited resources. The results approved by the Vice Chief of Staff were: to consolidate manpower management responsibilities under the Deputy Chief of Staff for Personnel; to consolidate responsibility for military training under the Deputy Chief of Staff for Operations and Plans; to make the Director of Program Analysis and Evaluation responsible for resource management review; to realign responsibility for managing base operations functions within the Army staff, including making the Chief of Engineers responsible for real property maintenance activities; and to make the Comptroller of the Army responsible for developing Army resource management policies. Manpower responsibilities were transferred and consolidated by 1 October 1978. The other changes were in the process of being carried out.

In 1976 the Secretary of the Army ordered special studies of eighteen United States installations to investigate the possibility of ending, reducing, consolidating, or relocating their operations. At the end of the fiscal year eleven studies had been completed and acted upon and seven were in progress.

On 26 April Secretary Alexander announced the initiation of seventeen additional base realignment studies aimed at eliminating over 3,200 civilian spaces and converting about 3,000 military positions to combat roles. Savings were projected at about $90 million. Some of the actions under consideration were: closing Fort Monroe and relocating TRADOC's headquarters; discontinuing the Applied Technology Laboratory at Fort Eustis; consolidating the U.S. Army Management Engineering Training Agency at Rock Island with the U.S. Army Logistics Manage-

ment Center at Fort Lee, Virginia; transferring the U.S. Army Military Personnel Center from Alexandria, Virginia, to Fort Benjamin Harrison, Indiana; transferring certain military traffic management administrative functions from the Oakland, California, and Bayonne, New Jersey, terminals and consolidating them with the Military Traffic Management Command Headquarters in Arlington, Virginia; moving the Army's Logistic Systems Support Agency from the Letterkenny Army Depot in Pennsylvania and consolidating it with the Automated Logistics Management System Activity in St. Louis; reducing activities to a minimum at Fort Sheridan, Illinois, and Fort Douglas in Salt Lake City; consolidating base operations and support activities at the Dugway Proving Ground with most of the Tooele Army Depot in Utah; reducing activities to a minimum at the Presidio of San Francisco and closing its subinstallation, Fort Baker at Sausalito; and reducing or relocating the Army Theater Communications Security Logistics Support Center, Pacific, at Fort Kamehameha, Hawaii.

Further base closings, reductions, or consolidations might ensue from two major Army reviews of the total Army training base and Army medical centers. The training centers at Fort Dix, New Jersey, Fort Jackson, South Carolina, and Fort Bliss, Texas, might be closed, and the Letterman Army Medical Center at the Presidio of San Francisco might be closed or reduced.

None of these changes are imminent. They entail many long and costly environmental impact statements and congressional investigations. Closing Fort Dix, for example, has been under consideration for more than fifteen years.

Nearly all the base realignment studies examined the possibility of contracting out certain functions to private industries, especially such support functions as laundries and mess halls. The Deputy Chief of Staff for Logistics had been coordinating the commercial- and industrial-type activities program, but during the year it was transferred to the Army Management Division of the Chief of Staff's office to allow direct access to decision makers.

There were 4,069 Army commercial- and industrial-type activities at the end of this year, compared with 3,883 in 1977 and 3,630 in 1976. Capital investment was $4 billion. It was $4.7 billion in 1977 and $4.3 billion in 1976.

Reorganization of the major commodity commands of the United States Army Materiel Development and Readiness Command (DARCOM) was completed this year, two years after it began. Below, the order of their formal organization, is a list of

these new commands, their official designations, and the location of their headquarters.

Organization	Location	Established
Mobility Research and Development Command (MERADCOM)	Ft. Belvoir, Va.	23 Jan 1976
Natick Research and Development Command (NARADCOM)	Natick, Mass.	23 Jan 1976
Tank-Automotive Readiness Command (TARCOM)	Warren, Mich.	1 Jul 1976
Tank-Automotive Research and Development Command (TARADCOM)	Warren, Mich.	1 Jul 1976
Depot System Command (DESCOM)	Chambersburg, Pa.	1 Sep 1976
Missile Readiness Command (MIRCOM)	Huntsville, Ala.	31 Jan 1977
Missile Research and Development Command (MIRADCOM)	Huntsville, Ala.	31 Jan 1977
Armaments Readiness Command (ARRCOM)	Rock Island, Ill.	31 Jan 1977
Armaments Research and Development Command (ARRADCOM)	Dover, N.J.	31 Jan 1977
Aviation Research and Development Command (AVRADCOM)	St. Louis, Mo.	1 Jul 1977
Troop Support and Aviation Materiel Readiness Command (TSARCOM)	St. Louis, Mo.	1 Jul 1977
Security Assistance Center (SAC)	Alexandria, Va.	1 Nov 1977
Electronics Research and Development Command (ERADCOM)	Adelphi, Md.	1 Jan 1978
Communications Research and Development Command (CORADCOM)	Ft. Monmouth, N.J.	1 Jan 1978
Communications-Electronics Materiel Readiness Command (CERCOM)	Ft. Monmouth, N.J.	1 Jan 1978

DARCOM's remaining major field command, the Test and Evaluation Command (TECOM) at the Aberdeen Proving Ground, Maryland, was not involved in the reorganization because it is not a commodity command.

The tripartite division of the Communications-Electronics Command at Fort Monmouth split a number of activities. Not all electronics research and development functions were transferred to Adelphi, Maryland. The Combat Surveillance and Target Acquisition Laboratory remained at Ft. Monmouth, except laser research which was transferred to the Night Vision and Electro-Optics Laboratory at Ft. Belvoir. The Electronics Warfare and the Electronics Devices and Technology Laboratories also remained at Fort Monmouth, while INSCOM's signal warfare functions continued in the Washington area. Some minor atmospheric service activities were moved from Fort Monmouth to the Atmospheric Services Laboratory at the Army's White Sands Missile Range, New Mexico.

For the past several years the Army Hometown News Center at Kansas City, Missouri, a field operating agency of the Office of the Chief of Public Affairs, has promoted soldier morale and

community support by sending information on service members to their hometown newspapers. The Plan for the Management and Operation of Department of Defense Audiovisual Activities, prepared in March 1977 by the Joint Service Planning Group, subsequent studies, and recommendations from the military services led the Deputy Secretary of Defense to consolidate the Army and Air Force Hometown News Centers and the television news clip production function at Kelly Air Force Base, Texas. The Navy would continue to operate its own center at Norfolk, Virginia. The consolidation was expected to be completed in the fall of 1979. It will eliminate duplication of effort in this area.

Word Processing and Micrographics

The volume of word processing proposals in the Army continued to rise, and the systems introduced were increasingly complex and sophisticated. The U.S. Army Adjutant General Center evaluated 342 proposals for new systems, with expected savings or cost avoidance of over $32 million in the next five years, including 778 manpower spaces.

Among the proposals surveyed were several from the Reserve Components Personnel and Administrative Center in St. Louis. There was a recommendation to install postal locators at Forts Campbell, Jackson, and Knox. Army staff proposals came from the Military Personnel Center and the Deputy Chief of Staff for Research, Development, and Acquisition. Among large installations, proposals for integrating many base support systems came from Forts Campbell, Sill, Devens, and the Redstone Arsenal in Huntsville. The 1st Division at Fort Riley requested twenty word processing units for its personnel and administrative centers, while the 82d Airborne Division at Fort Bragg requested twelve. Most of the proposals were initiated in prior years.

Word processing systems were designed to save personnel spaces. Micrographics systems were designed to save critical storage space by reducing thousands of pages to a few small strips of microfilm. During the year the Army installed 422 systems, with an estimated five-year savings of $7.5 million.

All the computer output micrographic systems improvements and conversions in Germany reported last year were operational except for V Corps; its system should be in place next year. Micrographics computer output systems for standard multicommand information systems were introduced at forty-two Army installations. By the close of the fiscal year twelve of the installations had fully operational systems and technical training

had been conducted at ten additional sites. The Military Police Management Information Systems network of thirty-six Army installations were converted to micrographics. New standard computer micrographics systems were installed at Army commissaries at Forts Sam Houston, Meade, Lee, and Lewis. A standard microfiche interlibrary loan system was put into operation at Forts Bragg, Sill, and Belvoir, and in USAREUR. The Corps of Engineers management information systems were expanded. Advanced microfiche systems were tested for use in training and for a completely automated microfiche storage and retrieval system.

Under the Army copier control program, strict controls have been established over the procurement of all copiers. In the fiscal year there were 8,631 pieces of copier equipment, producing over 1 billion copies a year at a cost of slightly over $30 million. Average costs amounted to approximately .024 cents per copy. The most stringent controls have been kept on color copiers because of their cost and potential for abuse. Only six such machines were approved last year and in fiscal year 1978 the total rose marginally to seven.

Two micrographics service centers were established this year. The Sacramento Army Depot will provide regional original-source document and computer-output microfilm services to Army elements. The Fort Benning Central Microfilming Facility will provide original-source document services to post and tenant activities.

During the past year the Army awarded contracts to three firms, each of which will develop a prototype hand-held micrographic viewer for use in combat environments. Delivery of the prototypes for testing and evaluation is expected by the end of fiscal year 1979.

The Federal Property Management Regulation requires the Army and other federal agencies to maintain a computerized inventory, known as a data base, of all their micrographic copying equipment. The Adjutant General's Micrographics Management Division began designing such a system. When installed it will contain complete financial and placement data on all Army micrographic equipment.

Financial Management

The Army submitted a fiscal year 1978 budget request for $32,391.7 million to the Department of Defense on 30 September 1976. Following reviews by the Defense Department and the Office of Management and Budget, on 22 February 1977 the

TABLE 2—CHRONOLOGY OF THE FISCAL YEAR 1978 BUDGET
DIRECT BUDGET PLAN (TOA)
(In millions of dollars)

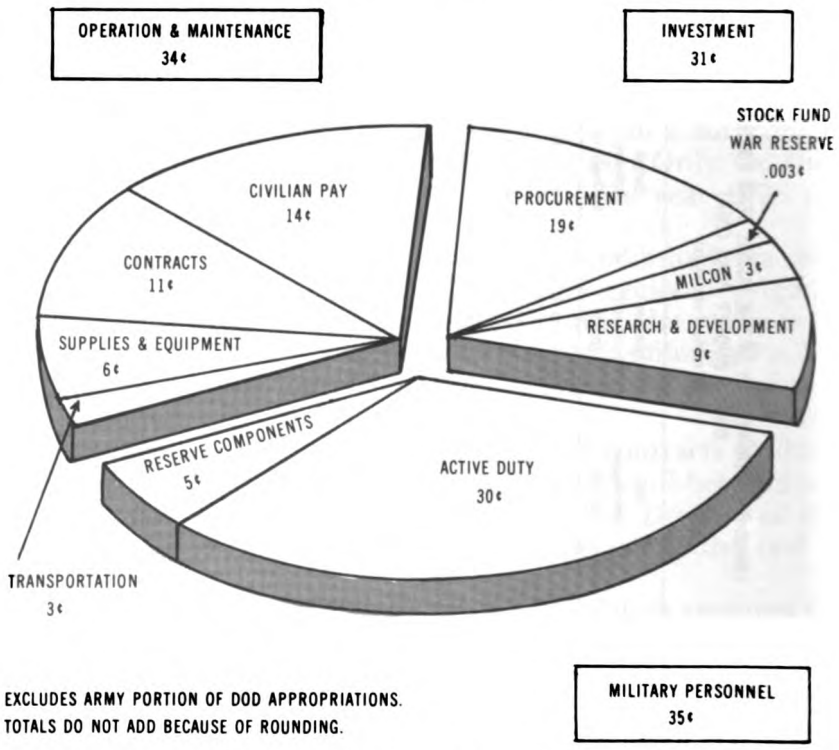
	DA Submission to OSD	Amended President's Budget	Budget Approved by Congress	Supplemental Approved by Congress	Approved Reprograming and Transfers	Total Obligation Authority
Military personnel, Army	9,015.2	8,790.9	8,741.8	424.9	10.0	9,176.7
Reserve personnel, Army	593.2	553.6	555.6	—	−23.0	532.6
National Guard personnel, Army	834.7	783.6	782.5	—	−10.0	772.5
Operation & maintenance, Army	9,456.7	8,490.9	8,139.4	335.6	157.1	8,632.1
Operation & maintenance, Army Reserve	430.2	389.0	380.8	12.3	−1.6	391.5
Operation & maintenance, Army National Guard	807.6	759.5	745.7	26.8	−6.1	766.4
Army Stock Fund	100.0	100.0	100.0	—	—	100.0
National Board for the Promotion of Rifle Practice	.4	.4	.4	—	—	.4
Aircraft procurement, Army	715.1	665.3	657.1	—	1.0	656.1
Missile procurement, Army	768.9	451.6	536.9	—	17.3	554.2
Procurement of wpns & tracked combat vehicles, Army	1,778.8	1,651.7	1,421.2	—	−12.6	1,411.3
Procurement of ammunition, Army	1,604.2	1,348.9	1,236.8	—	20.0	1,258.1
Other procurement, Army	2,297.7	1,503.4	1,406.0	—	5.3	1,480.9
Research, development, test & evaluation, Army	2,911.6	2,522.1	2,427.9	—	−9.6	2,418.3
Subtotal, excluding construction	31,314.3	28,010.9	27,132.2	799.6	105.7	28,037.5
Military construction, Army	963.1	646.8	630.8	—	—	630.8
Military construction, Army Reserve	57.1	50.5	50.5	—		50.5
Military construction, Army National Guard	57.1	49.4	49.4	—		49.4
Subtotal, construction accounts	1,077.4	746.7	730.7	—		730.7
TOTAL DIRECT BUDGET PLAN (TOA)	32,391.7	28,757.6	27,862.9	799.6	349.8	28,768.2

(May not add due to rounding.)

President submitted a revised request for $28,757.6 million. In October Congress passed a budget of $27,862.9 million (Public Law 95–111) and approved supplemental budget requests for $799.6 million.

During fiscal year 1978 there were many requests for reprograming and transfer actions. Those approved totaled $105.7 million. By the end of the year $28,527 million, or 99.2 percent of the total $28,768.2 million authorized by Congress, had been obligated. Chart 1 shows how the Army's dollar was spent in fiscal year 1978.

CHART 1—HOW THE ARMY DOLLAR WAS SPENT IN FISCAL YEAR 1978



EXCLUDES ARMY PORTION OF DOD APPROPRIATIONS.
TOTALS DO NOT ADD BECAUSE OF ROUNDING.

The Defense Authorization Act of 1977 (PL 94–361) required the President to include in the fiscal year 1978 Defense Operation and Maintenance Program budget projected price increases caused by inflation or cost growth. The increases were computed with an annual increase of 6.1 percent, based on Bureau of Labor statistics, which was applied to prices in the summer of 1976 for an eighteen-month period. The result was a request for an extra $257 million in fiscal year 1978.

Army Industrial Fund increases	$ 62,361,000
Stock Fund increase	52,111,000
Travel	5,002,000
Other purchases	149,560,000
	$269,034,000
Civilian pay decreases	12,067,000
Total	$256,967,000

The long-planned relocation of the Comptroller's Directorate of Finance and Accounting from Washington to Indianapolis and its merger with the U.S. Army Finance and Accounting Center (USAFAC) was completed in August. The move was triggered by a manpower utilization and management survey and by a Headquarters, Department of the Army, personnel reduction ordered in July 1977. Seventy-four civilian and eleven military spaces were involved. Only six civilians and four military personnel physically transferred to Indianapolis; four civilians and three military personnel remained behind to staff a USAFAC Pentagon liaison office.

A primary advantage of the transfer was the merger of the directorate's policy and systems development responsibilities with USAFAC's systems operation and maintenance responsibilities. They were integrated into a cohesive organization under a Deputy Commander for Finance and Accounting Plans, Policies, and Systems.

In a parallel move, on 5 June responsibility for the Army Management Structure Code was shifted from Washington to USAFAC. A remote cathode-ray terminal was installed in USAFAC which was linked to a memory data storage facility in the U.S. Army Management Systems Support Agency at Fort Belvoir. Depending on the availability of funds, the Army could now provide the data required by the Army Management Structure Code to correlate programing, budgeting, accounting, and manpower controls.

The Army Productivity Improvement Program, effective in October 1976, was to be revised to increase productivity qualitatively as well as quantitatively by improving management. During the year, the Department of Defense set the goal for the Army of a 2 percent productivity increase.

The Value Engineering Program contributed substantial dollar savings. A formal program in five major Army commands, it was concerned with eliminating or changing anything that increased the cost of an item or process that was not necessary to its basic function. During the year sixty-six value engineers in five major commands managed the program. Savings were $188

million. Civilian contractors contributed $49 million of that amount through financial incentives incorporated in their contracts. The success of the Value Engineering Program led other Army commands to consider its adoption.

The Quick Return on Investment Program was started in 1974 to generate hard savings in operating costs, both dollars and personnel, through timely investments in capital tools and equipment. The objective was to take advantage of many quick-return capital investment opportunities frequently lost in the long administrative delays of normal budget reviews and competition from higher priority requirements. The program was a method of obtaining investment funds for projects involving items ranging in cost from $1,000 to $100,000 that would pay for themselves within two years of installation. Savings were used to reduce other previously unfunded requirements at the installation level. Through this year the project funded $17.5 million worth of equipment, with cumulative savings of $55 million. This same $16.6 million will continue to accrue savings estimated at $64.8 million over the next five years.

Steps were taken in concert with the Department of Defense to develop a new and expanded productivity improvement capital investment program. It will identify and fund capital investment opportunities which would return the cost within five years regardless of procurement cost, and equipment amortizing in two years or less currently purchased through the Quick Return on Investment Program. The program gained congressional approval and integration into the budget process was begun.

The internal review program had been part of the comptroller's office both at HQDA and field levels. In May 1974, as part of the Army reorganization, the U.S. Army Audit Agency and the internal review functions were transferred from the comptroller to the Inspector General. In 1977, as a result of a General Accounting Office recommendation, the U.S. Army Audit Agency was transferred from the Inspector General of the Army to the Auditor General of the Army.

The Inspector General agreed that the transfer of the Audit Agency made direction of internal review policy incompatible with the other functions of his office. Therefore, on 13 March 1978, Army staff responsibility for internal review was transferred to the Comptroller of the Army. The Auditor General was assigned responsibility for audit standards and guides for use by internal review personnel throughout the Army. Total Army costing, a concept to provide life-cycle cost information on Army products and services, was being developed in the comp-

troller of the Army's office. A pilot test of the concept has demonstrated its technical feasibility for forty-three materiel systems, the resource requirements for which represent approximately 25 percent of the Army's budget authority.

Records Management

About ten years ago the Army began to realize that it had insufficient control over the records it was required by law to maintain. In simple terms it did not know positively what records it had or where they were located. The problem dated from 1955, when the Army turned over its records centers to the General Services Administration (GSA). GSA never had sufficient resources in funds or properly trained personnel to perform the Army functions.

To remedy the situation, the Records Management Division of the Adjutant General Center began a massive survey of Army records held by two national and thirteen regional GSA records centers. When the survey was completed this year, the Adjutant General Center had control over approximately 270,000 linear feet of Army records. More than 150,000 linear feet of that total have been offered by the Army to the National Archives, including 77,000 this year.

After completing this survey, the Adjutant General Center instituted an Army-wide reference and retrieval service and an orderly system for offering retired permanent records to the National Archives.

The Adjutant General Center also continued its survey of Eighth Army records in Korea. At the beginning of the year the Eighth Army had an estimated 40,000 linear feet of records, of which 20,000 would have to be retained after the units concerned were withdrawn.

The heavy workload continued for Army records managers imposed by the Freedom of Information Act in 1972 as amended and the Privacy Act of 1974. President Carter's Executive Order 12065 of 28 June 1978 on national security information increased the declassification workload enormously without providing additional personnel.

The most drastic change reduced from thirty to twenty years the period for classified documents to be automatically declassified unless reviewed and specifically extended. Six years was set as the initial classification period for all documents not exempt from automatic declassification regardless of their initial security classification, whether top secret, secret, or confidential. Previ-

ously the periods for declassifying documents in these categories had been ten, eight, and six years, respectively.

On 30 June 1975 the Army inventoried approximately 45,000 linear feet of classified records in the GSA Federal Records Centers, plus an additional 25,000–30,000 feet in various Army libraries, schools, and museums, or a total of nearly 100,000 linear feet. Records Management Division officials estimated that 30 percent of these holdings would not be retained as permanent records, and that 2,500 linear feet would be retired to Federal Records Centers each year. To meet the twenty-year declassification rule, at least fourteen people must be added to the Army Declassification Operations Branch. The Army requested those additional spaces, so far without success.

The Privacy Act of 1974 required the President to submit to Congress annual summary reports on operations taken under the act. For 1977 the Army reported an 88 percent increase over calendar year 1976 of requests for access to or amendment of individual military records. The numbers rose from 82,210 to 158,659. Of the latter, 153,998 were granted totally, and 624 were granted in part; the remaining 47 were totally denied. Individuals filed fifty-six appeals under the two categories of denial and partial denial. Subsequently thirty-two of these appeals were granted totally or partially. Ten privacy related civil actions were filed in federal courts against the Army with one judgment for the government and nine pending in various district courts. During fiscal year 1978 there were twenty-two appeals, of which nineteen were denied, one granted, one withdrawn, and one was pending negotiation.

To obtain personnel for its records management service, this year the Army established an Army-wide Records Manager Career Program. Some 300 people have been screened for a Department of the Army roster from which over fifty vacancies have been filled. During the next year another 150 are expected to register in the program.

In August the National Archives and Records Service submitted a formal inspection report on the Army's revised records management program. The report commended the Army functional files system, micrographic management, civilian career program, and other elements. It suggested that the Army examine its procedures for the control, creation, maintenance, use, and disposition of audiovisual records. It advised strengthening controls over the use of copying equipment, and making an inventory of the Army's machine readable records reported in the Army Inventory of Data Systems. Identifying all

machine readable systems was the first step toward developing disposition instructions and publishing regulations for preserving permanent records.

The Adjutant General's Publications Directorate improved the quality of administrative publications under an Army publications management program instituted in November 1977. In January 1978 an Editorial Control Division was established in the directorate to help Department of the Army writers draft administrative publications. The division was charged with making the publications easier to read, understand, and use.

Before the manuscript for any new or revised Army regulation is published, it must be edited and approved by the Editorial Control Division. Since January the division has edited approximately 135 publications. The objectives were to reduce the reading comprehension level of most administrative publications from the current seventeen-plus grade level to a level between the tenth and twelfth grades, and to reduce the number of pages by 10 percent. To date the division has averaged a 20 percent reduction in the number of pages.

The division was preparing a writing style guide, a graphics standard manual, model regulations incorporating the new writing guidelines and graphic standards, and a writing/graphics training package for Army writers for publication in late-1979.

A parallel program has been instituted to improve the quality and reduce the volume of Army regulations in the *Federal Register* and the Code of Federal Regulations as directed by President Carter in March. The Army deleted thirty regulations, reducing the total by 40 percent. Six of the regulations published were rewritten, lowering the average reader comprehension level from the sixteenth grade level to between tenth and twelfth grade.

In summary, the Army continued making progress toward controlling the amount and costs of its paperwork. Records management, including making them available to the public in a reasonable time, was a slow process, for Congress did not appropriate sufficient funds.

8. Logistics

Logistics are shaped by the Army's responsibility to protect the life and liberty of the American people in a tense international environment. In peacetime the Army must work to maintain the symmetry of power relationships. Threats must be analyzed, and readiness to meet them must be achieved. The Army is fully involved in the functions, activities, services, and procurements that come under the general heading of logistics.

In January 1977 Secretary of Defense Donald H. Rumsfeld presented the Ford administration's 1978 defense budget to Congress. Noting that the United States is no longer invulnerable in the modern world, Rumsfeld stressed that "our nation simply cannot allow Soviet capabilities to continue expanding and U.S. capabilities to retrench—as they have over the past decade—without inviting an imbalance and, ultimately, a major crisis." In his presentation, Secretary of the Army Martin R. Hoffmann pointed out that "the continuing growth of Warsaw Pact military power, the militarism of North Korea and other Communist states, coups, insurgencies, border disputes, and terrorism contain the potential for confrontation and conflagration." Secretary of Defense Harold Brown presented the 1979 Carter administration defense budget to Congress midway through the 1978 fiscal year. He referred to "an increasingly precarious conventional balance between NATO and the Warsaw Pact in Europe." Secretary of the Army Clifford L. Alexander confirmed that "the improving capabilities of the Warsaw Pact have sharpened our focus on the European area and on the overall readiness of our force manning, training, equipment, and deployability."

Against this background, defense rested upon three categories of military force: strategic nuclear, theater nuclear, and conventional. As the backbone of conventional forces, with sizable elements in Europe and the Far East, in fiscal year 1978 the Army addressed the continuing requirements of readiness and sustainability with a budget suffering the pinch of inflation. The terms "current dollars" and "real dollars" qualified the financial picture, and "real growth" became a way to estimate progress before inflation.

Support of Forward Deployed Forces

One of the Army's major logistical tasks is supporting forces overseas at the end of long lines of air, sea, and land communications. Requiring large quantities of equipment and supplies, these forces and those of our allies guard regions vital to U.S. interests. They can be quickly reinforced by using prepositioned materiel configured for units in the United States ready to be flown to join troops already on station.

The Army began prepositioning equipment in Europe in the late 1960's. In 1969 the first annual training exercise was held for units earmarked for Europe. Although the shortages caused by diversions to the Middle East during the 1973 Arab-Israeli War have been remedied, the stocks require modernization.

A fiscal year 1978 allocation of $33.6 million was the first in a program to improve the preparedness of the U.S. Army and ultimately NATO for a Warsaw Pact threat. The funds will be used in part to design and construct maintenance facilities to augment controlled humidity storage areas in eight locations in Germany.

The fiscal year 1979 program is the first to employ the ready-for-issue-facility concept, in which basic unit equipment and supporting supplies are located together in a single facility. The Federal Republic of Germany will handle future construction.

NATO has traditionally defined logistics along national lines. Members have planned lines of communication for their forces unilaterally, and host nation transportation support has been based upon bilateral agreements. Consequently, the movement control system became duplicative and fragmented. To relieve this situation, U.S. Army logisticians have developed a concept for NATO lines of communication that would streamline the transportation process and bring it under a central control. By year's end it had been viewed favorably by American and some allied representatives and was pending presentation to NATO.

The Army continued transferring certain stocks from Defense Logistics Agency sources to the New Cumberland Army Depot in Pennsylvania to improve supply support to Army and Air Force elements in Europe. The depot remained the base installation for an air line of communication to Europe. Repair parts are palletized there, moved by commercial truck to Dover Air Force Base in Delaware, flown to Rhein-Main and Ramstein Air Bases in Germany by the Military Airlift Command, and delivered by military truck to eighty-nine Army support units. Over 1,500 short tons were shipped each month. There was a

fifty percent reduction in delivery time and general improvement in equipment service and supply.

Security Assistance

The Army has provided our allies with security assistance since the end of World War II. It strengthens defense agreements, the regional military balance, U.S. base and operating rights, and political relations. It also compensates for the withdrawal of U.S. forces from overseas.

Security assistance became a formal program in 1950. Since then the Army has contributed more than $25 billion in grant assistance and sales. In recent years the emphasis has shifted from grants to sales; the number of countries receiving new grants has shrunk from forty-three in 1965 to twelve in 1977 and eight in 1978.

Recent policy modifications at the highest levels of government have changed the program. Following a review of U.S. conventional arms policies, and with the aim of reducing arms traffic worldwide, on 19 May 1977 President Carter announced that the United States would henceforth regard arms transfers as an exceptional instrument of national security policy; the United States would take the lead in reducing arms sales.

Except for the NATO countries, Japan, Australia, and New Zealand, U.S. policy limits recipients by country and dollar ceilings. Grants and sales are prohibited to nations engaged in activities inimical to U.S. interests, particularly in the area of human rights. Only eight countries were authorized new materiel grant aid during 1978: Greece, Indonesia, Jordan, the Philippines, Portugal, Spain, Thailand, and Turkey. Aid to Turkey was suspended until 28 September because of the Turkish-Greek dispute over Cyprus.

Although the U.S. withdrew from Ethiopia, foreign military sales programs continued in Morocco, Tunisia, and Zaire, and a new program began in Kenya. The U.S. provided Egypt with an English-language laboratory as a prelude to further sales.

The fiscal year 1978 military assistance program set a ceiling of $228.9 million for the Army, Navy, and Air Force. Approximately $219 million was allocated. The Army allocated $73.4 million as follows (millions of dollars, actual deliveries in parentheses):

Greece	14.089 (0.020)	Portugal	11.746 (4.696)
Indonesia	10.605 (5.848)	Spain	8.219 (2.285)
Jordan	12.498 (7.747)	Thailand	5.670 (11.076)
Philippines	10.341 (8.040)	Turkey	0.206 (0.107)

Actual deliveries of Army grant aid during fiscal year 1978 totaled $39.8 million.

In the foreign military sales program, new orders for materiel and services have been declining. The dollar value of new orders peaked in fiscal year 1974 at $4.2 billion. By fiscal year 1977 the figure was $2.8 billion; in 1978 it was $2.73 billion. Highlights of this year's new orders were as follows (millions of dollars):

Saudi Arabia	2.100	Jordan	.079
Iran	.170	Greece	.038
Israel	.042	Korea	.209

Western European countries retained their great interest in security assistance, particularly for obtaining advanced weapons systems. Attention centered on coproduction as a path to force modernization. The Federal Republic of Germany became a mediator between the United States and European countries interested in coproduction. These developments furthered standardization, interoperability, and political cooperation.

Developments in Greece, Turkey, and Portugal were favorable to NATO. The United States continued supporting Portuguese ground force modernization, and tension between Greece and Turkey relaxed after the United States lifted the Turkish embargo. Greece seemed to be drifting toward reintegrating its forces with NATO.

U.S. relations with Yugoslavia improved during the year. Yugoslavia's Federal Secretary of National Defense visited our country, and U.S. officials assured him of our support and respect. We continued discussing security assistance with the Yugoslav government.

Security assistance surveys of the Middle East and Africa increased this year. They were designed to gather information about economic, political, and military conditions in countries requesting our aid. Surveys were made in Lebanon, the Sudan, Kenya, and Jordan.

Saudi Arabia remained the beneficiary of one of our largest assistance programs. A U.S. military training mission managed most of the program. The Corps of Engineers handled construction, a separate manager handled modernization of the Saudi Arabia National Guard, and special military teams handled training. The success of this training has spurred interest in other countries; teams are scheduled for Egypt and Yemen in 1979. Assistance to both nations is on the upswing because of the Egyptian-Israeli peace negotiations and their growing pro-Western attitudes.

A number of Latin American countries have rejected U.S. security assistance, and we have canceled programs in others because of human rights problems. Nevertheless, this year twelve countries received foreign military sales financing or training. Security assistance to Argentina was terminated on 30 September 1978, and assistance was phased out for Brazil when it refused to submit its internal situation to examination.

Negotiations proceeded with the Philippines. The U.S. agreed to provide certain kinds of assistance in exchange for the use of certain bases, notably Clark Air Force Base and the Subic Bay Naval Base. As the year closed, military talks were progressing as representatives of both nations sought to resolve basic issues.

In 1977, when President Carter decided to withdraw American ground combat forces from the Republic of Korea within five years, he assured South Korea this would not jeopardize its security or the balance of power in the Far East. The U.S. thus planned measures to strengthen and modernize South Korean forces. Forces would be withdrawn in proportion to increases in South Korean strength. Army logistics, intelligence, and communications personnel would remain. U.S. and South Korean officials agreed to establish a combined command and to continue military exercises. They developed a priority list of materiel needed to upgrade the South Korean army. With congressional approval, approximately $800 million worth of that equipment will be transferred from withdrawing American units at no cost to South Korea. The Army made plans to add ammunition to the war reserve stockpile for allies in South Korea. The $244 million requested for this purpose for fiscal year 1978 was approved.

United States support to the United Nations complements the security assistance program. The United Nations Participation Act of 1945 authorized the President to help supply and equip United Nations forces and to demand reimbursement from it for expenses incurred. In 1948, when the United Nations started its first peacekeeping effort, the truce supervision organization in Palestine, the United States provided assistance. Truce observers have been on duty for three decades, and U.S. assistance has waxed and waned with the flow of events.

On 3 October 1973 the Joint Chiefs of Staff asked that the Army Chief of Staff be the executive agent for U.S. logistics support of United Nations forces. Support began in earnest that year when the U.N. established the United Nations Emergency Force in the Sinai as a buffer between Egypt and Israel. In May

1974, after Israel and Syria ceased fighting, the U.N. established the United Nations Disengagement Observer Force along the Golan Heights border. In March 1978 the U.N. established the United Nations Interim Force in Lebanon along its forty-mile border with Israel following an Israeli incursion into Lebanon. Its mission was to confirm the withdrawal of Israeli forces, restore peace and security, and help the Lebanese government regain its authority in the area.

The U.N. requested and received approximately $2.1 million in goods and services from the United States in 1978. Another $8.0 million in airlift support was provided to transport troops and equipment for the interim force in Lebanon, all on a reimbursable basis.

Logistics Planning and Management

On 30 May 1978, the Department of the Army approved twenty-one concepts developed in a study of logistics in the communications zone. The study had been prompted by deficiencies in supply, maintenance, and transportation support of the Army, primarily in Europe, and applied to logistics organizations and systems in the land area between the corps rear area and the ports and beaches.

To unify logistics worldwide, the Army prepared and tested a primary reference list of activities crucial to logistical readiness. It was an important tool in developing the five-year defense program and the Army budget. The Army was updating the list at year's end for worldwide distribution in October 1978.

Standardization remained a watchword of logistics management. Guidelines were coordinated with the Director of Army Automation. Data elements were reviewed and some were approved for standardization. Attention centered upon interservice support agreements as a way for local commanders to improve operations. The information in the Defense Retail Interservice Support data bank was tested, and the Army staff and major commands were issued guidelines for improving its accuracy.

The Army Inspector General audited and inspected the management and accountability of Army materiel at the retail level. His recommendations produced a number of actions. Battalion commanders were required to instruct company commanders on inventory procedures. Company commanders were designated as property book officers or hand receipt holders, and instructed to perform 100 percent inventories whenever commands were changed or assumed and report the results to

division/installation commanders. New procedures were developed to account for lost, damaged, and destroyed property. The officer education system was modified to include mandatory property accountability training, work was begun on simplifying supply publications, and security was tightened for Army property at organizational/installation levels.

The Army Logistics Specialty Committee secured approval to consolidate three officer specialties—general troop support materiel management, supply management, and logistics services management—into a single specialty, Materiel and Service Management. Steps were taken to reinstate the combat arms detail for regular officers commissioned in combat service support branches, and attention was focused on using combat service support officers in all battalion supply officer (S–4) positions. Logistics subjects taught in officer basic and advanced courses and in battalion/brigade command refresher courses were reviewed. Training with industry continued to be successful, and the first warrant officer entered the program. Numerous administrative actions were taken to revitalize the noncommissioned officer logistic program. An area of concern in supply, maintenance, and transportation civilian career management was the delineation of responsibilities between the functional chiefs and the Civilian Career Management Field Agency in light of Army staff personnel reductions.

Logistics Systems

The Army has several logistical and management systems in various stages of development. Systems in which technical advances were made during the year include the standard army ammunition system, which will integrate supply and maintenance management of conventional ammunition, guided missiles, and large rockets; the standard Army maintenance system, which deals with materiel maintenance; the direct support unit standard supply system, which will replace two other systems and apply to the whole Army; the standard Army intermediate level supply subsystem, which aims at a single intermediate system worldwide; the wartime standard support system for foreign armed forces, which will provide more responsive materiel support to friendly nations during wartime; and the armor management information system–logistics, a data tool to govern the tank fleet.

The Materiel Development and Readiness Command continued planning and executing command automation objectives under the five year automated data processing program. Under

it, systems furnished effective wholesale logistics support to the Army. The standard depot system was extended to the McAlester, Crane, and Hawthorne Ammunition Plants, and their operation was transferred to the Army from the Navy as the Army assumed managerial responsibility for the joint conventional ammunition program.

The command's automated systems are hampered by the limitations of third generation equipment of the mid-1960's. The Army is taking advantage of advances in computer technology to improve them. It is installing minicomputers to extend the capacity of processors. The use of distributive processing will bring system capabilities closer to the user and permit interactive processing. This evolutionary approach avoids the disruption of a massive system change. It also preserves the Army's investment in current programs.

The total Army equipment distribution program relates projections of equipment distribution to budget and program objectives. First-phase projections were completed on 1 July and are used extensively.

Materiel Maintenance

The purpose of the depot maintenance program is to overhaul equipment that lower maintenance echelons cannot repair, and to return it to the user. This year the Army allocated $1,019 million for depot maintenance and support: $773 million for overhauling unserviceable equipment, $9 million for technical, administrative, and new equipment training, and $237 million for maintenance support. Depot staff and machinery augmented by contractor services carried out the program.

At the outset of the fiscal year the Army estimated the program would involve repairs worth $1.307 billion. The value of maintenance work under way or ordered at the end of the fiscal year was $346 million. Consequently, the Army took steps to make future estimates more accurate. Force packaging, reliability centered maintenance strategies, and zero-based budgeting were introduced into the program. Reliability centered maintenance strategies identified items requiring depot maintenance; force packaging related these requirements to the field so maintenance resources would be applied in a way to support a "come as you are" war concept; and zero-based budgeting highlighted the areas where funding would contribute most to combat readiness.

Materiel maintenance is under constant evaluation. This year studies addressed such subjects as commodity-oriented support

maintenance for conventional materiel, recording user participation in the Army oil analysis program, improving test, measurement, and diagnostic equipment support, applying personnel space criteria to new facilities, collecting field data for wholesale equipment developers, and raising field command readiness with maintenance assistance and instruction teams.

The Army completed two studies on depot maintenance production planning. A depot rationalization study determined the optimum workloading process by assigning specific weapons systems to designated depot maintenance facilities. A depot baseline study defined maintenance requirements for peace and mobilization. The studies enable the Army to relate readiness goals to workload requirements, to plan effective depot modernization programs, and to improve the efficiency of maintenance operations.

The Army has capitalized on its Vietnam experience by reducing the levels of aviation maintenance from four to three. Aviation unit maintenance has been established at companies with ten or more aircraft to support. Direct and general maintenance support levels are being consolidated into one intermediate level supporting divisions, echelons above divisions, and other nondivision aircraft. Aviation intermediate maintenance primarily supports unit aircraft rather than the supply system. Depot level maintenance remains essentially the same. The three-level system has been instituted in U.S. Army, Europe, in Eighth U.S. Army in Korea, in the 1st Cavalry Division, and in selected TRADOC and Army Reserve flight support activities.

The "on condition" aircraft maintenance program described in last year's report moved forward in 1978. Requirements declined for depot overhaul of light observation helicopters. In March the annual worldwide aviation logistics conference was held in St. Louis at the U.S. Army Troop Support and Aviation Materiel Readiness Command. The participants decided to repair light observation craft in the field by depot contact teams rather than in a depot, except in cases of crash or battle damage.

Supply Management and Depot Operations

Much of the materiel that flows through the Army depot system is financed by the Army Stock Fund, a revolving fund that finances inventories of supplies and provides working capital for industrial-type activities. The Army replenishes the fund with annual budget appropriations. In fiscal year 1978 obligations of $3.8 billion supported $3.7 billion in net sales. The Army was authorized to obligate approximately $436.5 million of the

procurement appropriation for secondary items; returns from users were $762.8 million, about 17 percent higher than had been forecast.

Of the 1978 operation and maintenance appropriation of $8.6 billion, about 26 percent, or $2.3 billion, was allocated to central supply and depot maintenance. These two areas provide the receipt, storage, issue, maintenance and transportation of supplies and equipment worldwide and the maintenance of an industrial base. The 1978 budget increased allocations for central supply by $65 million and maintenance funds by $168 million. A Directorate for Resources and Management was established under the Deputy Chief of Staff for Logistics to tighten controls of certain supply and maintenance funds. The advantages of centralized resources management were apparent in 1978–80 programing and budgeting.

Management of scarce major items requires data on assets distribution at unit and intermediate levels. Under a new continuing balance system, such data are assembled in a reporting process that extends from the installation level to Headquarters, Department of the Army, and covers tanks, trucks, and other major items. Detailed unit level data will be phased into a future total Army equipment distribution program.

Marking and reporting on equipment location in the distribution system received increased attention. Service representatives assembled under Army chairmanship to study logistic marking and symbol reading. The steering group contacted government agencies and private industry to develop an efficient marking system.

Other subjects of study included procedures for a wartime direct support system of requisitioning, stock levels, and distribution; the compatibility of the repair parts supply system with soldier capabilities; and increasing the return of reparable secondary items from the field to the depot. The Army also came up with a concept for using the National Guard's four transportation aircraft repair shops in emergencies.

During the fiscal year the Army continued reducing base operations support functions in Okinawa. Eight functions were transferred to the Air Force and seven to the Marine Corps; one other minor function will be passed to the Air Force in the coming year.

The location and status of war reserve stocks, especially ammunition, is a major consideration in supply and depot operations. Stocks are validated annually. The United States concentrated on raising South Korea's production capability to meet its

war reserve requirements. Under the Foreign Assistance Act of 1961, this year the Army was authorized $224 million to increase South Korea's reserve ammunition stocks. About $99.4 million worth was transferred to South Korea from Okinawa, Honshu, and Hawaii; $67.6 million worth of U.S. stocks already in South Korea was transferred to that government; another $57 million worth was shipped from the United States. These stocks raise the value of South Korea's war reserve to about $758.8 million.

The Army studied South Korea's ammunition requirements in light of the forward defense concept, the withdrawal of the 2d Infantry Division, and the transfer of U.S. equipment to Korean forces. The U.S. Army Pacific review group met during the year to chart the course of realignments in the Pacific for 1978–82.

Transportation

A Department of Defense joint service team reconvened to expand the Defense intransit item visibility system. Work continued on the terminal operations subsystem and Department of the Army movements management system. One of its elements, visibility of intransit cargo to support theater transportation movements, advanced to formal testing.

The Army began a review of watercraft and terminal unit requirements. As the year closed the structure developed in 1977 to support a corps-size force was undergoing modification to support over-the-shore and fixed post operations. Watercraft disposal fell behind schedule at the storage facility in Okinawa, delaying its closing from September 1978 to January 1979. In Europe, the first of two DeLong piers arrived at Hythe, England, in June; a second one is scheduled to arrive there early in 1979.

The Army leads the Defense containerization effort. A test shipment of ammunition from the United States to Europe in eighteen commercial containers used the Navy's Earle system of internal restraint. The Army published a Container Safety Criteria and Inspection Standards Handbook and regulations for maintaining and marking equipment. Contracts were awarded for lift and handling equipment.

The Army joined the other services in the Military Traffic Management Command's program to induce household goods carriers to submit competitive rates based upon volume economics. The program was expanded to other overseas regions during the year. Steps were taken to improve personal property moving and storage at installations.

Facilities and Construction

The military construction appropriation represents about 2 percent of the Army budget. The active Army, the Army National Guard, and the Army Reserve each receive a share.

In fiscal year 1978 there was a partial moratorium on construction pending an examination of the domestic base structure. Thus the Army asked for $963.1 million for military construction. The President's review requested $646.8 million, and Congress appropriated $617.0 million. The following tabulation shows how it was broken down (millions of dollars):

	FY 1977	FY 1978
Operation and training	11	22
Maintenance and production	34	63
Research facilities	14	17
Supply and administration	52	145
Hospital and medical	75	89
Troop housing and community support	167	55
Utilities and land improvements	126	49
Design, minor construction, access roads	66	92
NATO	80	85
Total	$625	$617

In May the Army submitted its 1980–84 construction goals to the Secretary of Defense. This five-year plan was based on the Army stationing and installation program. The following table portrays the program (millions of dollars):

	FY 79	FY 80	FY 81	FY 82	FY 83	FY 84	Total FY 80–84
Major construction	730.7	974.6	1,074.8	1,056.3	969.1	985.0	5,059.8
General authorization	96.4	90.0	88.0	90.0	86.8	86.8	441.6
NATO infrastructure	90.0	90.0	90.0	90.0	90.0	90.0	450.0
Total	917.1	1,154.6	1,252.8	1,236.3	1,145.9	1,161.8	5,951.4

The 1978 appropriation provided $26 million in new obligational authority for minor construction projects. Another $16 million from previous years was available for obligation. By the close of the fiscal year all these funds had been committed to approved projects. Actual obligations, however, were about $34 million; the devaluation of the dollar caused bids in Europe to exceed approved costs. Some projects had to be reprocessed late in the year.

The transfer of sovereignty over the Panama Canal Zone from the United States to Panama affected military construction. On the eve of the 1978 fiscal year, the presidents of the two nations signed two treaties. One, the Panama Canal Treaty, required the U.S. to turn over certain areas of Fort Amador and Albrook Army Airfield to the government of Panama on

1 October 1979. Other U.S. property would be transferred later. On 1 October 1980, for example, Panama will take over the facilities housing the Defense Mapping Agency. A year later it will take over medical supply warehouses, and on 1 October 1982, a large air-conditioned Army-Air Force exchange system warehouse. Fort Gulick, except for family housing, will be transferred on 1 October 1984.

The demise of the Panama Canal Company has spurred a number of new construction requirements. On 1 October 1979 the U.S. armed services will assume certain of its functions. The Army will operate medical and retail stores and collect post refuse. The Air Force will run the canal zone's postal system, and the Defense Dependent School System will assume U.S. educational responsibilities.

Before the Senate ratified the treaty, the armed services were constrained from actions that could be construed to assume ratification. As a result, the Army did not design construction for relocating its units. The headquarters of the 193d Infantry Brigade, the 79th Army Band, and the 470th Military Intelligence Group, now located on Fort Amador, will relocate to Fort Clayton and Corozal; the 210th Aviation Battalion, with over fifty rotary and fixed wing aircraft, will be moved to the Howard Air Force Base–Fort Kobbe complex. These moves must be completed by 1 October 1979. The installations receiving the relocated units will remain Defense sites for the life of the treaty or until 31 December 1999.

The military construction subcommittee held hearings prior to the ratification vote. The Commander in Chief, Southern Command, testified that the treaty would produce construction requirements in excess of $42 million. Although not permitted to begin design, the Army was allowed to take prudent measures using organic elements to define the project's scope and cost.

When the Senate approved the treaty in April 1978, the Army began designing nearly $35 million worth of construction. Senator Edward W. Brooke's Resolution of Ratification allowed a lapse of one year before the treaty would go into effect. With this added time, the Department of Defense requested a $44.1 million fiscal year 1979 budget amendment. At congressional request, the Office of Management and Budget did not forward the amendment. The Army then sought approval to use the Secretary of Defense's emergency military construction authority for minimal construction to relocate its units in Panama. Congressional appropriation committees consented provided the President would certify its urgency. President Carter did so,

and the Mobile, Alabama, District Engineer's office contracted with five architect-engineer firms to complete the construction designs. Panama's climate made haste even more critical. To take advantage of the dry season, construction had to start before 1 December 1978.

The Corps of Engineers gave engineering and construction management support in varying degrees to six foreign nations during fiscal year 1978, some under the security assistance program. Construction projects valued at $193.1 million were completed in Saudi Arabia, and design and construction contracts were awarded for about $659 million. The corps helped Jordan develop the design, specifications, and cost estimates for a $62.2 million armor rebuild facility. Engineering and construction contract management assistance continued in Iran; projects costing $7.7 million were completed, and plans were under way to provide design and construction management assistance for facilities that would cost about $1.9 million. The corps was planning to help Egypt design and construct a $5.2 million aircraft flight simulator facility. Engineer assistance to Somalia was planned as well.

Under the foreign assistance program, the Federal Republic of Germany requested and received Engineer aid in designing and building their flammable cargo storage area at Dulles International Airport near Washington, D.C.

The Army continued working toward the long-range goal of matching facilities to force structure requirements. A data bank on 258 major military installations was completed in 1977; in 1978 the existing capability was evaluated against 1977 force requirements. As the year progressed, capability plans were prepared for sixty-five installations in the United States, similar planning was introduced for overseas installations, and $4.4 million was allocated to fourteen engineer field offices to support master planning.

Army engineers reviewed, tested, and inspected military facilities construction projects. Regulations covering design and construction contracts were tightened to make the contractor fully responsible for the quality of his work. To take advantage of mass-production, the Army developed new procedures for procuring industrialized building systems and new concepts for meeting the functional requirements of facilities. There were advances in estimating costs, writing specifications, and evaluating installation utility plans.

The U.S. Army Facilities Engineering Support Agency provided installation engineers technical assistance not readily

available in Army installations or major commands. Support teams of eight to twelve persons were stationed at key installations throughout the United States. They made power plant inspections and electrical system infrared surveys, calibrated circuit breakers and protective relays, investigated electrical and mechanical system failures, and provided energy conservation assistance. The agency also managed the nontactical generator program, which would provide large module power equipment and a cadre of trained technicians to support military contingencies.

Design was initiated for modernization of industrial facilities at the Watervliet Arsenal in Watervliet, New York, which makes cannons and cannon components for self-propelled artillery, towed artillery, and tanks. The modernization will cover construction and equipment. At the Mississippi Army Ammunition Plant in Bay St. Louis, the nation's newest munitions manufacturing facility, site development was completed in July and the construction contract for the metal parts manufacturing facility was awarded in September. The project will cost $400 million and take four years to build. It will collocate the manufacture of metal parts and the loading, assembling, and packing of 155-mm. improved conventional artillery munitions.

The contract to modernize the Fargo Building in Boston, Massachusetts, was awarded in August 1978. With an estimated cost of over $20 million, the renovation will be completed in 1980 and will provide space for almost 2,000 Defense personnel.

Congress appropriated $50.6 million to construct four research, development, testing, and evaluation facilities: an aeromedical research laboratory, a physical sciences laboratory, an energetics laboratory, and a dynamic test facility alteration. In the program to build housing for synthetic flight training systems for five types of Army helicopters, twenty-one out of forty buildings have been completed, five were in design, and thirteen were in construction planning.

The Army finished installing a granular carbon absorption water treatment pilot system at the north boundary of the Rocky Mountain Arsenal. In compliance with the State of California's legal demands, the system will remove contaminants from ground water.

As the executive agent for the Defense recruiting facilities program, the Army completed 1,150 actions toward establishing new offices and relocating, expanding, and upgrading existing ones.

The Army completed a number of design guides for libraries, education centers, recreation and crafts centers, and

physical fitness centers. Guides are in progress for child care and youth activity centers, and another is planned for community centers. The guides will help tailor new or renovated facilities to local programs. Its child care facility research earned the Army a citation from *Progressive Architecture* magazine.

The Army updated its health facilities design manual to include new criteria and uniform design procedures. A new design guide for the maintenance facilities of table of organization and equipment units was in preparation. It will be used in the five-year program to design and construct over sixty facilities at a cost of nearly $500 million.

In February the Army inspected the design of the 300-seat unit chapel which was developed for the troop barracks complex at Fort Leonard Wood, Missouri, and later adapted to various locations.

The Corps of Engineers is the construction agent for other Defense elements. The 1978 Air Force program was for $338 million; of which $269 million was actually awarded. Work done for the Navy cost $27 million, and work for the Defense Nuclear Agency, the Defense Logistics Agency, the Defense Mapping Agency, and the Defense Dependent School System cost over $46.6 million.

The Adjutant General's turnkey construction program provides for the design, construction, and equipping of such nonappropriated fund projects as club and recreation facilities. Over $6.4 million in projects were completed by the end of fiscal year 1978, and another $12.1 million in projects were under construction.

The Corps of Engineers continued acquiring land for the civil works program and for other government agencies. Approximately 1,535 acres of improved land were bought for about $8.8 million, most of it to expand clear zones at twenty-seven Air Force bases. To meet Department of Interior requirements, the corps acquired land for the Delaware Water Gap National Recreation Area and the Big Thicket National Preserve in Texas; in the latter location, the Beaumont project office bought 627 tracts containing 24,000 acres for $21.5 million. This year a total of 73,220 acres comprising 900 tracts was acquired at a cost of $62.3 million.

The Corps helped the Department of Energy obtain a fourth salt mine site for petroleum storage. Major pipeline rights-of-way connecting the storage sites with terminal and dock facilities were a principal element of the land purchases. Land for the St. James Terminal and docks on the Mississippi River was obtained as well.

The Department of the Army controls approximately 12.6 million acres of military land. With improvements, the land has an acquisition cost of $14.1 billion. From 1 July 1977–30 June 1978, the General Services Administration disposed of 3,071 acres of Army land and improvements in the United States, with an acquisition cost of $10.6 million. An additional 87,153 acres, with an acquisition cost including improvements of $233.6 million, were reported as excess to the General Services Administration.

In accord with Executive Order 11954 of January 1977, this year the General Services Administration scheduled surveys of fifty-seven Army-controlled properties. Survey reports were submitted on thirty-four properties. Fourteen of the reports made recommendations which together declared 2,350 acres as excess. The Army agreed to dispose of 1,409 acres.

The use of Army operations and maintenance funds for real property increased in 1978. Obligated funds for this purpose were over $1.3 billion. Procuring and operating Army utilities systems contributed most to the increase due to escalating fuel and energy costs. The Army's utilities bill for the year was $375 million.

The Army's integrated facilities system (IFS), a multicommand, automated information and evaluation system of managing real property resources, was implemented at seven continental U.S. installations. Over 6,800 installation personnel participated in functional training. A flexible and user-oriented facilities engineering supply system connected to IFS was tested at two installations. The Army expects the system to be approved this coming year and has plans to expand it.

Physical Security

The Army's physical security program aims to prevent unauthorized access to government equipment, facilities, and materiel, and to safeguard them against theft, sabotage, damage, and misappropriation. Every attempt is made to limit the administrative burden of complex security standards, yet at the same time to place responsibility for protection upon commanders down to the unit level. Army-directed security standards are limited to those required by the Department of Defense (i.e. for nuclear or chemical weapons) and to highly dangerous or valuable items. The Army must budget and defend fund requirements for physical security. Functional responsibilities are spread across the Army staff, and a physical security review

board was established in 1974 to centralize security matters for the Secretary of Defense and the Chief of Staff.

On 1 June 1978 the Department of Defense published DOD Manual 5100.76, Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives. On 5–9 June an international physical security conference was held in Washington, D.C. Representatives of the Army staff and major commands reviewed the Army's physical security program.

Security considerations cut across many areas of Army operation and involve such widely divergent actions as hiring civilian guards and safeguarding nuclear reactors. This year the Army concentrated on reducing the high turnover rate for civilian guards by improving their grade, pay, and promotion opportunities. Security publications were refined to ensure that factors unique to each nuclear reactor site were not overlooked in blanket standards.

The Army published several security documents, including AR 190–52, Countering Terrorism and Other Major Disruptions on Military Installations, and DA Pamphlet 190–52, Personnel Security Precautions against Acts of Terrorism. Program and budget guidance issued in May 1978 identified resources that would permit TRADOC to begin counter-terrorist training in fiscal year 1980. As the year closed, twenty-five Criminal Investigation Command agents received hostage negotiation training with the Nassau County Police Department in New York.

The rise in terrorist activity in the early 1970's induced the armed services to assess security at ammunition and weapons storage areas around the world. The U.S. agreed to finance a long-range security program to upgrade NATO facilities; NATO will reimburse us at a later date. Funding delays forced a cutback in the number of installations earmarked for security improvements. Complexities in international competitive bidding and infrastructure funding further reduced the program. Work proceeded in two phases. The first, general construction such as fencing, roads, and guard force buildings, was well along at many sites as the year closed. Contracts were being awarded for the second phase which consisted of special security features such as lighting and intrusion-detection systems.

9. Support Services

The Army did not neglect its responsibility to fulfill the spiritual, mental, and physical needs of the individual. Support services covered religion, health, education, housing, recreation, clothing, and burial arrangements. In Europe, for example, 1978 was the Year of the Soldier. Steps were taken to raise the quality of life for American military personnel and their families stationed there. To help American troops in Europe cope with the declining value of the dollar, the President's budget request for fiscal year 1979 sought $18.7 million to improve postal service, physical fitness facilities, community and recreation centers, libraries, essential mess kitchen equipment, bachelor housing furnishings, education centers, and chaplain activities.

Religion

The Army chaplain's mission is to serve the religious and moral needs of the military community. Traditionally this has involved religious services, sacraments and rites, religious education, and pastoral care. In recent years greater emphasis has been given to pastoral care, including preventive and rehabilitative counseling. Chaplains have been urged to provide leadership to guide the members of the military community toward fuller character development.

An example of the enlarged scope of chaplain activities was the five-day child abuse and battered wives seminar sponsored by the Office of the Chief of Chaplains in March 1978. The seminar was held to give Army chaplains a forum for exchanging information, formulating preventive measures, and improving pastoral care in these situations.

During the fiscal year clinical pastoral training centers were established at Fort Benning, Georgia, and Fort Hood, Texas. They were sponsored by the Chaplain Center and School, FORSCOM, and TRADOC. The centers were accredited by the Association for Clinical Pastoral Education, Inc., and they offered 48-week courses for intense training. Courses began in August with four students enrolled at each installation.

Since 1954 the Army has selected a Deputy Chief of Chaplains of the Roman Catholic faith when the Chief of Chaplains was Protestant, and vice versa. Another custom developed to select two Protestant Chiefs of Chaplains in succession, followed

by a Roman Catholic Chief of Chaplains. The Army ended both practices when the Judge Advocate General advised that they might be contrary to the Civil Rights Act of 1964 as well as Defense and Army equal opportunity policies. He stated that the advantages of rotation might be considered along with other relevant factors, but rotation must not be a fixed criterion for selection. Accordingly, in 1978 when the Army selected a new Deputy Chief of Chaplains, all eligible chaplains were considered, and the outcome was a Chief and Deputy Chief who were both Protestants.

This year the Government Printing Office published the final three volumes of the five-volume series on the history of United States Army chaplains. This five-year project chronicled the first 200 years. The five volumes were *From Its European Antecedents to 1791*; *Struggling for Recognition, 1791–1865*; *Up From Handymen, 1865–1920*; *The Best and Worst of Times, 1920–1945*; and *Confidence in Battle, Inspiration in Peace, 1945–1975*.

Housing and Homeowners Assistance

Family housing construction was limited to projects authorized and awarded in prior fiscal years. No contracts for new housing units were awarded. However, contracts for two authorized and funded projects totaling 400 units should be awarded in fiscal year 1979. The Army has asked $588 million in new funds: $37.2 million for 855 new units, $17.8 million for improvements, $1 million for energy conservation measures, and $2.8 million for minor construction and planning.

As executive agent for all military services, the Army paid $2.9 million under the Homeowners Assistance Program to 537 applicants due to base closures and realignments. In addition, mortgage assumption on thirty of the ninety-six properties acquired under the program totaled $341,133.

Food Services

As of the end of this fiscal year, food service facilities supporting the Army Food Service Program worldwide were as follows:

	CONUS	Overseas	Total
Dining facilities	683	462	1,145
Garrison bread bakeries	0	1	1
Central pastry kitchens	1	0	1

During the year the dining facilities served 231,274,156 meals valued at $239,743,116. The bakeries produced 445,900 pounds of bread, and the pastry kitchens made 1,151,200 servings.

Research on improving food delivery in the field continued

during the year at both TRADOC and the Natick Research and Development Command (NARADCOM). Phase I of the research was completed last year. It demonstrated flaws in the combat feeding system, and the practicality of consolidating field feeding at the battalion level. Several short-term improvements in field feeding equipment went into development, and prototypes were constructed. A tent feeding system (XM 75) tested and recommended by NARADCOM was not approved, so the mobile field kitchen trailer will remain the standard equipment. Phase I of the testing did not produce enough information to make a decision on consolidating field feeding at the battalion level, but phases II and III conducted during September 1978 should provide the required information.

A program to modernize permanent dining facilities began in 1974. The facilities will have more attractive decors, self-service areas with separate short-order and regular meal serving lines, modern food preparation equipment, and adequate restroom and locker facilities. Funds are provided by the Army's military construction program (MCA). This year's MCA budget contained funds for modernizing one dining facility at Schofield Barracks, Hawaii. A total of 461 dining facilities have been selected for modernization.

Aided by the knowledge gained from a pilot kitchen program conducted during the summer of 1977, the Army began full-scale testing of a central food preparation system in February of this year. Data was collected through September, and a final evaluation is due in December.

The Army Comptroller has placed the U.S. Army Troop Support Agency (TSA) in charge of operation and maintenance funds for procuring portable food service equipment and other items for modernizing dining facilities. TSA received and obligated $5.8 million during the year for such equipment.

This year TSA supervised four food management assistance teams which offered guidance to 6,755 Army food service technicians at 85 installations and 521 dining facilities. The teams paid particular attention to reserve component units, visiting 15 reserve component installations and 607 dining facilities. They also helped operate new and modernized facilities.

The Philip A. Connelly awards are given annually for excellence in Army food service. The 1978 program was divided into three categories: dining facilities for more than 200 people; smaller dining facilities; and food service for units in the field. Awards went to the small dining facility at the 159th Aviation Battalion, 101st Airborne Division, Fort Campbell, Kentucky;

the large dining facility at Headquarters, U.S. Army Reception Station, U.S. Army Field Artillery Training Center, Fort Sill, Oklahoma; and the field kitchen for the 1st Battalion, 37th Armor, 1st Armored Division, Ratterbach, Germany, which also won last year.

Commissary and Subsistence Supplies

The Defense Logistics Agency, the Defense Personnel Support Center, and Army support units of all major commands worked jointly during the year on policy and procedural changes for stocking and rotating subsistence war reserve items. The Office of the Chief of Engineers, the U.S. Army Troop Support Agency, and a civilian architect completed standard designs and equipment schedules for eight types of commissaries. The designs included equipment arrangement. They should save time and money in commissary construction projects by eliminating repetitive design work.

The Army's commissary system of 141 main stores and 30 annexes had sales of $1.1 billion. To improve check-out service, improved versions of the Automated System for Army Commissaries were installed in Europe and the southeastern United States. The rest of the installations are scheduled for the coming fiscal year.

To encourage managers to improve their operations, a new award was given to the best commissary. The commissary at Fort Carson, Colorado, was selected as the first winner.

Clothing and Personal Equipment

Function and style are the major factors that influence developments in military dress. On the functional side, clothing must be developed for male and female, garrison and field, general and special use. Where style is concerned, trends in fashion and improvements in materials work for change. These were some of the considerations behind clothing actions in fiscal year 1978.

The men's version of the gray-green service shirt was approved in July 1978. It will be available in post exchanges in the summer of 1979 and through supply and issue in 1980. Produced in short- and long-sleeve versions, this shirt will replace the tan shirt worn with the Army green and Army summer tan uniforms. The long-sleeve version will always be worn with a tie; a tie will be worn with the short-sleeve version when it is worn with the green coat. When the shirt is used as an outer garment, insignia will be limited to a name tag, shoulder marks for offi-

cers, and pin-on metal chevrons for enlisted personnel. Chaplains will wear branch insignia above the left pocket.

The women's service shirt will use the same fabric. A new woman's ensemble containing a blouse, skirt, slacks, jacket, and long- and short-sleeved shirts will soon be tested. The ensemble uses an all-year fabric, and it will replace the summer and winter weight Army green uniform, the Army green pantsuit, the white short sleeve shirt, and the summer cotton cord and mint green uniforms. The new women's Army green uniform and service shirts are expected to become available early in fiscal year 1982.

A new distinctive grade insignia was approved for the Sergeant Major of the Army. It differs from the standard sergeant major insignia in that it has two stars placed horizontally within the insignia field.

A study began on whether members of the reserve components should be issued their clothing in kind or receive a clothing allowance.

Laundry and Dry Cleaning

This year more than $2 million was spent modernizing the fifty-four laundry and dry cleaning facilities operated by the Army. Labor-saving machinery was purchased. As the year opened Congress imposed a government-wide moratorium on commercial service contracts for laundry equipment. Negotiations were suspended while Congress examined cost effectiveness. At the same time, costs were compared at Forts Richardson and Wainwright in Alaska, where laundry facilities had become government-owned but contractor-operated. Private contractors managed the facilities with their own personnel, using buildings and equipment furnished by the posts.

To improve management functions in all government military laundry and dry cleaning facilities, managers, superintendents, and military service officers of laundry and dry cleaning operations attended the annual two-week course given by the nationally accredited International Fabricare Institute.

Heraldic Activities

The Institute of Heraldry met the needs relating to symbolic items and furnished heraldic services in response to requests from other armed services, federal agencies, and the American Red Cross. This year the institute produced designs for 450 heraldic items, 3,750 drawings and paintings, and 114 sculptured models, molds, and casts. It developed 100 new items, completed 4,077 support actions related to research, de-

velopment, and engineering, inspected 200, 294 items, and continued researching alternative materials and manufacturing processes.

Morale, Recreation, and Welfare

The Adjutant General Center reorganized its morale and recreation functions. Levels of supervision were reduced, and more assets were placed at the operational or user level. The Recreation Services Directorate was replaced by the Morale Support Activities Directorate, and seven programs were combined into three management groups: physical activities, library activities, and community and skill development. The center stressed cross-training of staff members, integrated programing, and constructing multipurpose facilities for use by the entire military community.

The Army added triathlon and archery to the sports program. Army men's and women's teams competed in fourteen interservice sporting events, winning eight and finishing second twice, third twice, and fourth twice. Army members participated in seventeen national competitions and were on three U.S. world teams, cycling, fencing, and parachuting. Cheryl Stearns, an SP–5 and the only female on the Golden Knights, the Army's parachute exhibition team, won honors as the U.S. national champion and world champion in women's parachute competition. Soldiers served on seven armed forces teams that competed in events sponsored by the *Conseil International du Sport Militaire*. U.S. teams placed first in basketball, boxing, and shooting, second in modern pentathlon and track and field, and third in wrestling; the U.S. did not place in the judo competition.

Community and skill development covered a wide range of endeavors in the visual, applied, manual, and industrial arts, and were geared to the entire military community. The Army worked closely with civilian organizations in promoting these activities. For example, the Army cooperated with the American Legion and the American Chess Foundation to hold the nineteenth annual armed forces chess tournament, and with the National Federation of Music Clubs and the American Society of Composers, Authors, and Publishers to sponsor the annual parade of American music. The Army worked with a number of theatrical groups planning the first American Theater Month, which was held in May 1978. This project gave recognition, encouragement, and support to individuals involved in all aspects of theatrical production. The Army worked with other federal agencies to promote morale support activities: it worked

with the Civil Service Commission on combined federal campaign benefits, and with the Department of Labor on using CETA employees at Army installations.

The management of Army clubs underwent changes which originated in the 1977 study on the subject noted in last year's summary. The western regional office of the Adjutant General Center's Club Management Directorate was abolished, and the eastern regional office in Washington, D.C., was expanded to a United States regional office responsible for on-site technical training and management assistance for clubs in the fifty states, the canal zone, and Puerto Rico. Personnel were added to the European regional office; the Korean regional office was retained; and a board of advisers, was created for the Army club system with representatives for each major Army command and the Sergeant Major of the Army.

The Club Management Directorate provided on-site technical training and management assistance to 282 installations. In the spring a task force of club management specialists from the directorate helped Army clubs in Europe with financial problems. The declining value of the dollar had severely increased operating costs.

There were 222 graduates from the club management course, 61 from the executive club management course, and 52 from the armed forces culinary course.

Total revenue for Army clubs was $282 million. Total sales were $238.1 million, and net income was 4.8 percent of sales, or $11.3 million. There were 334 club branches in operation at the close of the year; 291, or 87 percent, were profitable.

Encouraged by rising profits, the Army embarked on a program to upgrade club facilities. It involves selecting clubs and planning their improvements. Twenty-four clubs were renovated at a cost of $4,818,000, and six new clubs were built at a cost of $7,212,000. The Army club loan program, which provides interest-free funds for construction and renovation, had twenty-three loans outstanding at the end of the fiscal year with a face value of $16,573,299. Additional loans totaling $7,345,000 were approved.

At the beginning of the fiscal year the Army reorganized its bands to absorb a cutback of 190 manpower spaces imposed by Congress. This left 2,596 officers and enlisted personnel authorized for the program. Rather than eliminating bands, the Army reduced each band slightly, thus continuing the role each band has played in sustaining troop morale, recruiting, and community support.

The Army and Air Force Exchange Service began carrying less expensive lines of merchandise to complement top quality, brand name items. Customers had been complaining about high prices. These "budget specials," initially on children's clothing, proved very popular, and have been expanded to other products.

The Army published a new regulation effective 1 October 1978 that formally incorporated the Child Support Services (CSS) program and the Army Child Advocacy Program (ACAP) into the Army Community Service (ACS) program. Army regulation 608–1 provides a standard CSS program throughout the Army and sets requirements for staff, facilities and equipment, services, command and staff supervision, and child/staff ratios. As integral parts of the ACS program, the CSS and the ACAP should receive more attention at the installation level.

The Department of the Army and the Department of Health, Education, and Welfare began a three-year demonstration/evaluation project at Fort Lewis, Washington, to improve the quality of military child care centers. ACAP's reporting procedures were improved, and work was done toward establishing an ACAP central registry for collecting and disseminating information on child abuse.

Analysis began of ACAP's legal and jurisdictional problems. Child care was designated a morale, welfare, and recreation activity, and the child care subcommittee of the Department of Defense Morale, Welfare, and Recreation Coordinating Committee was established. The subcommittee held its first semiannual meeting in August 1978. It serves as a forum for exchanging information and is expected to work toward standardizing military child care services. In November 1977 the Army Emergency Relief Board of Managers further expanded eligibility criteria by making members of the Army National Guard and the Army Reserve (on continuous active duty for a period in excess of 30 days) and their dependents eligible for assistance.

Since it began in 1955, the retirement services program has been left mostly to the discretion of commanders in the field. Early in fiscal year 1978 the Army made the program mandatory. Activities that would receive increased emphasis as a result of this decision were preretirement orientation, preparation of survivor benefit plans, retiree open houses, retirement councils, and retiree volunteer services.

By the close of the fiscal year progress had been made in developing staffing guides and job descriptions for retirement services officers, devising a course of instruction for training

retirement services counselsors, and meeting the needs of oversea retirees. The Retired Army Bulletin was changed from a Department of the Army pamphlet to a periodical, making it more responsive to its readers. On 30 September 1979 President Carter signed legislation improving retirees' survivor benefit options. As of that date, there were 470,000 retired personnel and survivors.

With strong support from the Department of Defense, in February 1978 the U.S. Postal Service established additional military mail gateways at O'Hare (Chicago) and Dulles (Washington, D.C.) International Airports. Prior to this, all mail between the United States, Europe, and Latin America went through New York, creating backlogs which consistently delayed mail delivery to soldiers overseas. On 1 September 1978 mail gateways were added in Florida at Miami and Jacksonville to serve military posts in Latin America. Effective 1 July 1978 the U.S. Postal Service agreed to handle all military letters as air mail. Negotiations continued for a new postal agreement between the U.S. Postal Service and the Department of Defense.

Education

The soldier of today must be proficient in techniques and technology unknown to soldiers who served in World War II and Korea. The quality recruits are the high school diploma graduates; the successful soldiers are those who take full advantage of the blend of military training, military education, and formal civilian educational opportunities to develop to their fullest potential not only as soldiers but as citizens and human beings.

The purpose of Army education is to increase readiness by improving individual professionalism and skill proficiency, to attract and retain highly qualified and well-motivated soldiers, and to help individuals fulfill their aspirations by providing them with opportunities to continue their education while serving on active duty.

The Army's continuing education program extends into numerous federal, state, local, and private agencies, associations, and educational institutions. Over 600 colleges and universities work with the Army. Many are under contract to provide programs and instruction on Army installations. The Departments of Labor and Health, Education, and Welfare are working with the Army on basic educational programs for prospective recruits who do not meet its educational standards.

Participation in Army Continuing Education Programs

	FY 76	FY 77	FY 78
High School			
Course enrollments	203,832	214,670	146,326
Course completions	157,982	153,499	122,229
Graduations	28,061	26,766	18,991
VO-TEC			
Course enrollments	55,959	44,824	226,337 *
Course completions	40,339	29,677	164,174
Certificates	8,405	14,434	15,512
College (associate in arts & undergraduate)			
Course enrollments	214,802	199,662	201,096
Course completions	158,751	154,525	164,032
Associate degrees	2,148	2,087	2,192
Undergraduate degrees	903	1,279	1,205
College (graduate level)			
Course enrollments	29,243	32,541	30,994
Course completions	22,908	25,641	25,999
Graduate degrees	1,271	1,622	1,549

*VO-TEC became skill development in 1978. It includes MOS improvement courses.

Congress has advised the Army to stress the basic skills of reading, speaking, writing, and arithmetic. Poor readers tend to have higher discharge rates, more difficulties in training, less satisfactory job performances, and less potential for career advancement. In July 1978 the Army began the Basic Skill Education Program to provide all soldiers with the educational skills they need to perform their military duties effectively or to develop professionally.

Fiscal year 1978 expenditures for basic education and high school completion programs were $9.3 million. In response to a congressional mandate, educational courses taught solely to provide soldiers the opportunity to meet state requirements for high school graduates were conducted during off-duty hours.

The Basic Skills Education Program was designed to meet the needs of both the commander and the soldier at no cost to the soldier, to allow participation of high school graduates as well as non-high school graduates, and to provide standardized testing. It has three phases. The first is conducted on base during initial training and covers reading and arithmetic to the fifth grade level. It provides English language instruction for soldiers whose primary language is other than English, principally Spanish. This year the Army determined that six percent of its enlisted personnel were functionally illiterate, and one-third needed some remedial basic education. The second phase of the program is conducted at permanent duty stations, and has the goal of raising language and computational skills to a ninth grade level. The third phase, also conducted at permanent duty sta-

tions, is scheduled to begin during fiscal year 1980, and will provide instruction beyond that offered in the second phase.

The Servicemen's Opportunity College Associate Degree Program was recently begun to encourage career soldiers to continue their professional development through academic studies. The first program was announced in September 1977 for the combat arms. During this year programs have been adopted for food service and mechanical maintenance. The Army is developing similar programs for about twenty-five career management fields. Seventy-three educational institutions support the associate degree program.

The Army Apprenticeship Program was begun in July 1975 when national apprenticeship standards for the Army were registered with the Bureau of Apprenticeship and Training in the Department of Labor. Patterned on apprenticeship programs in private industry, the program permits active duty soldiers in apprentice specialties to document their progress in perfecting a skill. Soldiers are awarded a journeyman's certificate when they satisfactorily complete the program for their specialty. Seventy-three apprentice programs have been adopted since 1975, involving more than 100 specialties. By September of this year 10,000 soldiers were enrolled.

In January management of the Army's nonresident language program was incorporated into the Adjutant General Continuing Education System. Nonresident language programs were those taught outside the Defense Language Institute's Foreign Language Center in Monterey, California, the English Language Center at Lackland Air Force Base, Texas, and the Department of State's Foreign Service Institute.

The Army language programs involved were refresher courses for Army linguists, the command language programs at Fort Bragg and Fort Devens, English as a second language, and headstart language programs for Army personnel on their way to foreign nations. These included Dutch, French, German, Greek, Italian, Turkish, and Portuguese. Programs were being developed for Japanese and Korean.

The post-Vietnam veterans educational assistance program authorized by Public Law 94–502 became effective on 1 January 1977. About 20.5 percent (26,275) of eligible soldiers who entered service during calendar year 1977 enrolled, and 34.2 percent (42,462) of those who entered in calendar year 1978. Approximately 100 veterans were drawing benefits under this legislation.

Health and Medical Affairs

Many health and medical problems were due to inflation and difficulty in retaining qualified personnel. Although total Army expenditures for medical services rose from $1.3 billion last year to $1.4 billion in fiscal year 1978, the bulk of the increase was due to military and civilian pay raises and the rising costs of providing health services to Army beneficiaries and soaring construction costs for new medical facilities. The distribution was as follows (millions of dollars):

Military personnel	535.0
Operations and maintenance	661.4
Research and development	67.6
Military construction	88.9
Other procurement	40.7
Reserve personnel	10.2
Total	1,403.8

The shortage of physicians in the Army health care system was reflected by a 6.5 percent drop in clinic visits and a 12.0 decrease in births: many retirees and dependents turned to civilian doctors for medical care. The average length of stay for all patients slipped from 7.2 to 7.0 days. Bed occupancy fell slightly despite an accounting change that tallied births as admissions and bassinets as equivalent to beds; if bassinets are not counted, bed occupancy fell 6.8 percent.

Although the requirement for active duty physicians was set at over 5,875, that many doctors could not be used efficiently during peacetime since training divisions did not require a full medical complement. The peacetime need, therefore, was set at 5,273, which would provide an efficient peacetime use, readiness to support disaster relief and contingencies short of mobilization, and an orderly transition to mobilization.

However, the authorized base strength of the Medical Corps for fiscal year 1978 was 4,009, and the actual strength was 4,063. A goal of 5,182 physicians by fiscal year 1984 was based upon the number of doctors expected to be on active duty, rather than the number required; the Army was unable to attract and retain them in sufficient numbers to reach the optimum figure. The 1984 objective represents an austere yet adequate active duty strength.

The results of the physician shortage were a decline in readiness, delays in health services, interrupted specialty services, greater dependence on higher cost contract and supplemental

services, increased use of private physicians under the cost-sharing Civilian Health and Medical Program of the Uniformed Services, an adverse effect on morale, and an increase in the cost of health care.

Contracting specialty services, purchasing supplemental care, and hiring civil service physicians temporarily relieved the situation, but such measures were costly and inefficient. Better solutions would be personnel management and legislation making military medical service competitive with the civilian sector, improving the Health Professions Scholarship Program, and continuing the Army's most potent career incentive, an attractive and practical graduate medical education program.

It was especially difficult to attract and retain adequate personnel in medical specialties. For over 32,000 Army officers and enlisted aviation personnel, there were only about ninety flight surgeons, and some activities had none at all. Army divers lacked the medical support they required. Programs were under way to remedy some of these deficiencies by training enlisted personnel and securing local civilian medical support. Some flight surgeons collocated with Army diving units were given appropriate courses by the Air Force and the Navy.

Medical strength reductions made it necessary to convert health facilities at Aberdeen Proving Ground, Fort McPherson, and Fort Benjamin Harrison into clinics, with commensurate reductions in personnel and services.

Shortages in the number of dentists and nurses particularly affected retired personnel and military dependents. The main problem was a familiar one—few dentists desired to remain past their initial tour when practice in the civilian world was so much more lucrative.

The Army took steps to give dental commanders at installations control of dental resources and to bring dental commanders closer to the commanders of the units or organizations they supported. Such moves have improved retention and productivity in the past.

During April there was a meeting at Fort Sam Houston, Texas, to improve communications with the reserve components and to help them recruit and retain personnel and sustain mobilization readiness. The conference improved the coordination of reserve component training requirements with the Health Services Command, increased training support from the Academy of Health Services, and revised recruiting procedures.

During the fiscal year the Department of Agriculture assumed responsibility for inspecting several meat items at packing

plants. Further transfer on a commodity-by-commodity basis will go on until the fall of 1979 when the Agriculture Department will perform all in-plant inspections. Improved veterinary drugs and equipment and studies on combat support in a theater of operation produced several revisions in the tables of organization and equipment of veterinary units and in plans for their location in the theater.

The Army sought $40.7 million to underwrite the medical care support equipment program for the fiscal year. The bulk of the request ($13.7 million) was for expanding old facilities or building new ones, and for modernizing or replacing materiel. New health facilities which were equipped included one hospital, five additions, four health clinics, five dental clinics, and one regional dental activity.

In recent years the Army has become concerned about medical reserve stocks prepositioned or destined for long-term storage in centralized facilities throughout the world. Because of limited storage sites, centralization raised the possibility that depots might not be able to assemble and ship medical materiel while engaged in other mobilization tasks. A joint effort by the Office of the Surgeon General and the Army Materiel Development and Readiness Command was in progress at Tobyhanna, Pennsylvania, to develop preservation, packing, and environmental protection measures to permit relatively maintenance-free long-term storage of medical equipment. Since medical support to Europe had first priority, a pilot project was completed and several sets of equipment for combat support hospitals were shipped there. Decentralized storage and prepositioned medical assemblages at unit mobilization or initial assembly sites throughout the nation and abroad would allow the Medical Department to support mobilization with more confidence.

In the medical unit self-contained transportable (MUST) program, initial issue of all necessary components was made to seventeen active Army combat support hospitals and one evacuation hospital. A full set was being assembled for a second evacuation hospital. MUST equipment for eight National Guard and seven Army Reserve combat support hospitals and three National Guard and five Army Reserve evacuation hospitals was provided for training. The Army had materiel on hand or set for acquisition to meet its inventory objective of sixty-six MUST assemblages.

Safety measures to protect Army personnel included eliminating X-rays from periodic medical examinations unless

clinically indicated. The Army continued emphasizing compliance with the Occupational Safety and Health Act.

The Army Medical Department was developing automatic data processing equipment to improve response to patient needs. The Army, the Air Force, and the Navy participated in the Defense-sponsored triservice medical information system (TRIMIS). The TRIMIS program office developed and won approval to provide interim automated support for pharmacy, radiology, clinical laboratory, and patient appointments. The system was expected to be ready for testing in fiscal year 1979 at Brooke Army Medical Center. Selected automatic data systems for large medical treatment facilities were tested at the Walter Reed Medical Center in Washington, and equipment was improved at Headquarters, Health Services Command, and the Armed Forces Institute of Pathology.

To assist Army medical officer procurement the Army refined the automated officer procurement data system, which contained seventy key elements of information on applicants for commissions. The data kept track of applications, provided statistics for Defense and congressional inquiries, and improved the procurement effort. The installation of a minicomputer with remote terminals to provide immediate retrieval of data and make the system more effective has been delayed.

The variable incentive pay (VIP) data base was completely redesigned. VIP was authorized by Congress in 1974 to encourage physicians to remain in service. The data base can now be used to answer eligibility, budgeting, and retention queries and help prepare the annual budget, which was about $20 million. Effective 1 October 1978 the centralized medical training fund will be under the Medical Department Personnel Support Agency. Automatic data processing of the training fund was expected to reduce costs, keep track of expenditures, and publish and store travel orders.

The Army handled 1,217 remains of active duty personnel and their dependents in the continental United States during fiscal year 1978. There were 957 remains processed in six Army-operated mortuaries for the period. Mortuary work load of all eligible categories of deceased persons totaled 2,174 for the period.

Casualty and Memorial Affairs

The remains of five World War II soldiers and airmen were recovered and identified: three from Assam, India, and two from Holland. The Army Central Identification Laboratory in

Hawaii identified the remains of thirty-five Army, Navy, and Air Force personnel and one civilian recovered from Southeast Asia and other areas. The laboratory hosted a six-man delegation from the Socialist Republic of Vietnam during 12–14 July 1978. The State Department sponsored visit permitted the laboratory to demonstrate record keeping procedures, information retrieval, and sophisticated techniques for identifying deceased service persons.

In August of last year the Defense Department announced the resumption of unsolicited status reviews of service members reported as prisoners of war (PW) or missing in action (MIA) in Southeast Asia. The Army began individual reviews under the Missing Persons Act. The situation changed as follows:

	PW	MIA	MIS*	TOTAL
1 Oct 77	10	141	55	206
30 Sep 78	5	52	25	82

* Missing (non-hostile).

During this period fifty-four returned prisoners of war were scheduled for medical reevaluations. The authority for returnees to receive care in military medical facilities expired on 30 September 1978.

The National League of Families of Americans Missing in Southeast Asia has urged its members to use comprehensive Freedom of Information Act requests to delay status reviews that might result in presumptive findings of death. The Defense PW/MIA Task Force determined that status reviews would not proceed until all agencies (primarily Department of the Army, Defense Intelligence Agency, Joint Casualty Resolution Center, State Department, and Central Intelligence Agency) had replied to individual league requests and the time allowed for appealing denials had expired. The Army received forty-seven league requests during the period.

During the year staff and technical visits were made to major overseas commands, ports of entry, Army mortuaries, and U.S. installations to provide more effective liaison and technical assistance. Last year the U.S. Army Nuernburg Mortuary processed 114 remains. In May this year this mortuary was closed and its operations were taken over by the U.S. Army Mortuary at Frankfurt.

The Casualty Services Division of the Adjutant General Center processed 1,125 active duty deaths, 4,913 retiree deaths, and 1,302 seriously ill cases in overseas commands. It also processed 708,625 records of emergency data. During the year

mailgrams were authorized in addition to telegrams. They are used to send confirmations of death and status reports to next of kin.

There were twenty-four major construction projects in the Army's master plan for the Arlington National Cemetery. Twenty were completed by the end of the year. The 1979 budget request approved by Congress allocated $330,000 for the final design of the Memorial Amphitheatre rehabilitation project and phase II of the cemetery roads repair project. Phase I has been completed. One master plan project is constructing a columbarium in Arlington for the inurnment of cremated remains. The columbarium will provide 10,000 niches, each of which will accommodate two urns. The master plan provides that, as the need develops, additional units of 10,000 niches each will be constructed, to a maximum of 50,000 niches. Construction of the first 5,000 niches was begun in July 1978.

10. Research, Development, and Acquisition

For many years the Army has attempted to keep pace with the expanding military capacity of the Warsaw Pact forces, especially the Soviet Union. Science and technology are key factors in the struggle. As in previous years, the fiscal year 1978 budget sought to achieve the best military capabilities possible within a limited-growth defense budget.

Budget, Management, and Acquisition

The first research, development, test, and evaluation (RDTE) program approved for fiscal year 1978 was based on the President's budget, and included constraints placed on the Army by the Under Secretary of Defense for Research and Engineering. The Under Secretary again identified certain parts of the program as areas of special interest, and directed that no funds be diverted from them without prior approval from his office. These areas were: all 6.1 and 6.2 programs, ballistic missile defense advanced technology, ballistic missile systems technology, conventional airfield attack missiles, automatic data processing equipment developments, night vision advanced development, electronic warfare vulnerability/susceptibility, advanced electronic device technology, joint compatibility and interoperability, evaluation of foreign components, NAVSTAR global positioning systems user equipment, and Army/Navy area surface-to-air missile technology.

Department of Defense deferrals were $147 million. Army deferrals based on total risk-cost estimates, memoranda of understanding, and triservice agreements were $87 million. Some significant deferred Defense and Army programs were OSD—ballistic missile defense advanced technology, ballistic missile defense systems technology, night vision advanced development, tactical electronic warfare, the single channel ground/airborne radio subsystem (SINCGARS), and remotely piloted vehicles; Army—congressionally imposed personnel space reductions, tank gun cooperative development, and the NAVSTAR global positioning system.

The Department of the Army RDTE budget approved for fiscal year 1978 was $2,418.3 million. Congress passed the Defense Appropriations Act reducing the Army's RDTE request of $2,625.7 million by $197.8 million. Ten million dollars was ex-

pected back from RDTE surcharges on foreign military sales. Congress reduced the RDTE technology base by $23.3 million. Other reductions included $9.8 million for tank gun cooperative development, $10.6 million for tactical electronic warfare equipment, $18.3 million for the interim scout helicopter, and $10.0 million for engineering development automatic test equipment. In addition, $9.6 million was transferred to operation and maintenance for a congressionally imposed space reduction.

The Army's fiscal year 1979 RDTE budget request for $2,787 million was submitted to the budget review committee in August 1977. The fiscal year 1979 budget for $2,741 billion was presented to Congress in January 1978. It incorporated the decisions of a review by the Office of Management and Budget and the Department of Defense. The fiscal year 1979 Defense Appropriation Act, which included $2,638.9 million for RDTE, was not passed until October 1978 because President Carter vetoed it.

The Army followed zero base budgeting concepts in putting together its RDTE budget. The Office of the Secretary of Defense expanded the three funding levels of minimum, basic, and enhanced into seven bands, providing greater visibility to RDTE programs. The Army continued using total risk assessing cost estimates to control expenditures for major materiel systems. Deferrals amounting to $31.6 million in eleven systems were identified in fiscal year 1978, and deferrals in nine systems of $35 million were identified for fiscal year 1979.

There are five categories of Army procurement appropriations: aircraft, missile, weapons and tracked combat vehicles, ammunition, and other. The fiscal year 1979 Army procurement budget submitted by the President on 23 January 1978 had an obligational authority request of $6.637 billion. The two authorization committees decreased it by $189 million. Congress further reduced it to $6.128 billion, or $509 million less than requested. All the procurement categories were affected.

The fiscal year 1978 Army procurement appropriations obligation plan was $6.964 billion. Of this amount, $4.986 billion was for direct Army procurement, and $1.978 billion was for reimbursables. The plan had three major segments: U.S. Army Materiel Development and Readiness Command ($6.171 billion), Headquarters, Department of the Army adjustments ($.615 billion), and other major commands ($.178 billion). Actual obligations against the fiscal year 1978 plan were $6.653 billion; $5.119 billion direct, and $1.534 billion reimbursable.

The lapse for expiring fiscal year 1976/7T appropriations is estimated at $240 million; $88 million in direct procurement reserved for contingent liability, and $152 million in reimbursables from reduced orders and generated augmentation and modernization reimbursables.

The *Army Science and Technology Objectives Guide* was published and distributed in May 1978. TRADOC again provided the most input, in coordination with the Requirements Directorate of the Office of the Deputy Chief of Staff for Operations and Plans. The guide emphasized specific Army user needs and that research and development efforts were directed toward them. It stated that approximately 90 percent of Army science and technology research effort in 1978 was devoted to identified requirements. Other work was in long-range technological opportunities.

In March 1978 the Research, Development and Acquisition Committee held a review for program objectives memorandum 80–84 to resolve issues in 6.1 research and 6.2 exploratory development program funding categories. Technology base funding profiles and single project funding/single program element funding reports were prepared. The Research, Development and Acquisition Committee met on 31 July 1978 to allocate fiscal year 1980 RDTE resources and balance them against Army needs. The committee's conclusions and recommendations were accepted for the technology base.

The Army's advanced concept team is a high-level group with civilian and military members. This year it evaluated twelve projects totaling $4.0 million, including thermal imagery enhancement, armored vehicle machine guns, millimeter wave radar, two-dimensional image transformers, true north seeking compasses, stabilized sensor platforms and dynamic tank muzzle deflection measuring devices. So far the team has thirteen new projects starting in fiscal year 1978, which will commit $8.3 million over this and the next two fiscal years.

The Army Materiel Development and Readiness Command laboratories submitted ideas for new systems to the Research, Development, and Acquisition Committee. The systems selected for development in 1982–84 include airborne self-defense, antitactical missile defense, Army digital distribution, assault breaker, self-propelled howitzer, smart target activated fire and forget projectile, and other indirect fire and air defense weapons.

The Army Science Board advises the Secretary of the Army and the Chief of Staff on research and development directions

and programs, system acquisition policies and procedures, and other matters that are affected by science and engineering. It functions under the cognizance of the Assistant Secretary of the Army for Research, Development, and Acquisition. The board was chartered in December 1977 to replace the Army's scientific advisory panel, ballistic missile defense technology advisory panel, ballistics research scientific advisory committee, Tank Automotive Research and Development Command scientific advisory group, and the scientific advisory group of the U.S. Army Missile Command. Its members are from industry, universities, and private consulting firms.

This year members were selected and processed, and an initial meeting was held 2–3 March 1978. The board participated with the Air Force Scientific Advisory Board in a summer study of battlefield system integration; in a ballistic missile defense standing committee to review the program; and in a quick reaction group for the SINCGARS program.

Science and Technology

The Corps of Engineers continued researching ice-engineering, bulk explosives, pavement surfaces, and other subjects.

Work proceeded on the problem of helicopter rotor blade icing. Tests of ice phobic materials reduced material candidates from approximately two hundred to five. A time-saving laboratory technique was developed simulating the icing of rotor blades.

Standardization testing of the contract blasting agent DBA 105P slurry explosive was the main activity in the military engineering applications of commercial explosives program during the year. The tests of this slurry explosive are being conducted by the U.S. Army Waterways Experiment Station, Vicksburg, Mississippi, with the aim of providing the field army with techniques and doctrinal guidance for using the explosive.

A successful method for rapid excavation of antitank ditches was demonstrated during field test no. 3 at the Big Black Test Site, Mississippi. A series of PVC pipe placement/demolition tests were conducted in May and June at the Truman Reservoir at Warsaw, Missouri. Field test nos. 4–6 were held at Aberdeen Proving Ground, Maryland; the Tropic Test Center, canal zone; and the Yuma Proving Ground, Arizona, in June, July, and August, respectively. Limited pumping tests of the blasting agent at the Big Black Test Site and tests at the Yuma Proving Ground for placing and detonating pipes over 400 feet were carried out

in September. A letter report, Evaluation of Cratering Effectiveness of IRECO DBA–105P Slurry Blasting Agent, and a summary data report, Waterways Experiment Station Miscellaneous Paper N–78–5 on blast cratering, were published.

Research on more cost-effective pavements in frost areas is performed by the Corps of Engineers, the Federal Aviation Administration, and the Federal Highway Administration. Recently this work has been combined in a study at the U.S. Army Cold Regions Research and Engineering Laboratory. Combining efforts and funds will save time and energy. The use of most state highway specified materials for roads and parking areas constructed by the Corps of Engineers was permitted on a job-to-job basis until June 1974. Since state pavements were generally satisfactory, the use of asphalt concrete meeting state requirements was permitted without Office of the Chief of Engineers approval after that date. Following state requirements has saved money and produced satisfactory pavements. Widening their use is under consideration.

The U.S. Army Waterways Experiment Station is testing regulated-set cement for rapid repairs and restoring battle damaged pavement. The load-carrying capabilities of four full-scale regulated-set cement sections were analyzed, and laboratory studies were done of the time-temperature-chemical additive effects on hydration times for regulated-set cement. Waterways Experiment Station personnel made two trips to Germany to train Army personnel to use it. They provided Army forces in Europe with a document summarizing pavement repair and rehabilitation, technical report C–78–2, and a film demonstrating the use of regulated-set cement.

Newly developed load-transfer devices were constructed, incorporated with asphalt concrete, soils stabilization, portland cement concrete, rapid-setting grout, and crushed limestone surfaces. Loading tests are now under way using full-scale loads of C–141 and F4 cargo and fighter/bomber aircraft.

This year's progress in the study of battlefield obscuration was motivated by the urgent need to understand the effects of natural and artificial aerosols on guidance and observation systems. The Army developed a plan for a library of algorithms and computer codes describing the effects of aerosols on electro-optical sensors. The goal is to replace battlefield testing with computer simulation. Field measurements for this purpose and in support of Copperhead tests were made at Meppen and Baumholder, Germany.

The Army made advances in electro-optical climatology, and

in measuring dust and smoke cloud growth. Preliminary work was done on a field device which measures the smoke given off by munitions. At the White Sands Missile Range, a large field test was conducted to determine the effects of dust on electro-optical/near millimeter wave transmission. Additional research was carried out at Dugway Proving Ground and Fort Sill. The U.S. Army Engineers Waterways Experiment Station and the U.S. Army Cold Regions Research and Engineering Laboratory assisted the Atmospheric Sciences Laboratory in planning these experiments.

Work on the Army terrain information system concentrated on developing laboratory models of tactical terrain information applications. A target locater was developed covering a 10 by 10 km. area based upon digital terrain data. TRADOC approved a letter of agreement to develop a quick-response multicolor copier for reproducing maps under tactical conditions. In September the Army contracted Xerox to design the copier.

Ballistic Missile Defense

Ballistic missile defense research and development continued this year, a hedge against the strategic uncertainties associated with the ballistic missle threat to the United States. Perimeter acquisition radar functions were transferred from the Army to the Air Force. The ballistic missile defense program was authorized 65 military and 431 civilian spaces for fiscal year 1978, and funds of $295,724,000: $107,297,000 for the advanced technology program, $106,188,000 for the systems technology program, and $82,239,000 for the Kwajalein Missile Range.

The advanced technology program continued to place increasing emphasis on transfer of mature technologies to the systems technology program and pursuing more advanced and innovative technologies. Major accomplishments during fiscal year 1978 were in data processing, discrimination, missiles, optics, radar, and technology analysis. Comparative analysis verified a millimeter wave radar homing guidance construct as an approach to endoatmospheric nonnuclear kill ballistic missile defense systems. Design was completed for a liquid bipropellant propulsion subsystem for testing as an exoatmospheric direct impact interceptor vehicle. Subscale hot gas tests of a high-force, movable booster control nozzle were conducted. An optical signal processor with an increased capability over those of conventional signal processors was tested. The design of a modular missile-borne computor that will perform on-board data processing for an advanced ballistic missile defense interceptor was

completed. Studies of particle beam technology for potential BMD application have been conducted.

The systems technology program in fiscal year 1978 centered on reducing system cost, improving effectiveness, and reducing lead time in the face of a growing and increasingly sophisticated threat. Analysis progressed of the layered defense system and the low altitude defense system. A contract was let for the homing overlay experiment interceptor; and the systems technology testing program went forward at the Kwajalein Missile Range.

Layered defense is a defense system with two layers operating cooperatively and selectively. It is a cost-effective source of exoatmospheric and endoatmospheric protection against Soviet reentry vehicles and sophisticated multiple target reentry vehicles. The system began early in fiscal year 1978 following an analysis in fiscal year 1977. The analysis showed that layered defense would be more robust and cost-effective than any of the other options available to counter the advancing Soviet threat to U.S. intercontinental ballistic missile forces.

The homing overlay experiment has two phases. The goal is to verify the technology associated with the overlay portion of the layered defense system. The first phase was a competitively awarded, multiple contractor study. In September 1977 the Ballistic Missile Defense Systems Command awarded contracts to the Boeing Company, Vought Corporation, and Lockheed Missiles and Space Company. Lockheed won the competition and was awarded a contract on 3 August 1978 to conduct the homing and kill phase of the experiment. Lockheed has the option to provide hardware and engineering services for the second phase of the experiment, demonstrating the technology necessary to detect, discriminate, and designate reentry vehicles at a range of several hundred miles in the presence of other objects.

The low altitude defense system analysis effort was initiated in fiscal year 1977. This year's work was devoted to examining in more depth the most promising concepts that had been analyzed. The effort pinpointed the technological problems of operating the system, especially in the severe nuclear environment associated with deploying an MX intercontinental ballistic missile. It also evaluated available and potential solutions. The results of the analysis are favorable enough to ensure it will continue in fiscal year 1979.

This year systems technology testing at the Kwajalein Missile Range focused upon the key hardware and software associated with the terminal ballistic missile defense system. Late in fiscal year 1977, the radar and data processors were tested separately.

Integration testing using limited capability software was begun, continuing into this year. It included detecting, tracking, and discriminating reentry vehicles from target of opportunity "threat clouds" launched from Vandenberg Air Force base. The software was steadily upgraded. The test is nearly over, and results indicate that the radar, data processing hardware, and software will meet or exceed design goals.

The Ballistic Missile Defense System Command operates the Kwajalein Missile Range. The range successfully supported Air Force tests of intercontinental ballistic missiles launched from Vandenberg Air Force base. Numerous agencies benefited from the results.

The Army's System Technology and Test Facility phased-array radar continued receiving extensive base and technical support. The Ballistic Missile Defense Advanced Technology Center's optical station was supported to a lesser degree.

The Army made preparations for testing the designating optical tracker. Costs were considerably reduced by a high-speed data link between components of the data processing center. Test plans were completed, and steps were taken to meet U.S. Air Force requirements for collecting data on land impacts of reentry vehicles. Alternatives were studied for meeting these requirements for impacts approximately 200 kilometers uprange. Space object identification efforts continued, and satellite track files were improved. Tests over a three-month period confirmed an expanded satellite detection and tracking capability.

The ALTAIR, a long-range tracking and instrumentation radar, demonstrated the ability to support Army and Air Force requirements for detecting and tracking foreign launches and cataloging other space objects. This successful effort determined the ALTAIR's adequacy as a contributing sensor to the Air Force's Pacific Radar Barrier and National Space Surveillance Control Center surveillance networks.

The Kwajalein multistatic measurement system was designed and initiated. It will perform target resolution discrimination experiments using the ALTAIR long-range tracking and instrumentation radar with bistatic receivers on remote sites. It will also provide an all-weather, highly accurate trajectory for intercontinental ballistic missile and other tests at the Kwajalein Missile Range.

Development

In fiscal year 1978 the Army moved closer to a new generation of weaponry and equipment. Requirements for common

NATO standards and other factors changed and delayed some programs.

This year the Army received $561.4 million for missile procurement. Plans for using the funds included buying the U.S. Roland and Stinger air defense systems, improving near-term air defense by procuring better Chaparral and Hawk missiles, raising antitank readiness with additional Dragon and TOW practice missiles, and improving assault missile fire support by purchasing enough Pershing Ia missiles to maintain the stockpile necessary to the quick-reaction alert role until Pershing II is supplied to the field.

The Patriot air defense program began a transition from development to production planning. Early in the year the project underwent a major reorganization to support phase II development and operational testing and to plan for a full-production decision that the Defense System Acquisition Review Council (DSARC) was expected to make in fiscal year 1980. Among the changes, the duties of the assistant project manager for development were expanded to include acquisition, and the assistant project manager for support was given more responsibilities.

The system reached a milestone on 13 October 1977 when an $83.5 million modification was awarded the engineering development contract, initiating the producibility engineering and planning effort. During December phase II search and track tests were completed.

Preparations were under way at White Sands Missile Range for the test flight with fire unit #2 by 1 October 1977. Flight testing in an electronic countermeasure resumed with a successful intercept of a drone on 4 November 1977 and the engagement of a formation target on 8 February 1978. On 24 April, using the tactical canister for the first time, Patriot scored a direct hit on a high-altitude target. Although all missiles were launched successfully during a major test of its multiple simultaneous engagement capability on 21 May, reliability failures in the missiles prevented successful test completion. The test was repeated with success on 4 October.

The modular digital guidance system's design test was completed, and the first such forebody was delivered for preflight certification testing in December 1977. During the summer of 1978 the White Sands Missile Range made preparations for the first modular digital guidance system flight. It was successfully conducted on 28 September. The "box score" for Patriot flight tests at the end of fiscal year 1978 was twenty-seven successes, two partial successes, one failure, and three no-tests.

The U.S. Roland short-range air defense system is based upon a European design. This fiscal year the system entered a full-scale test phase. The Army began adapting European manufacturing methods to U.S. techniques. The first fabricated U.S. Roland missile was delivered in mid-October 1977. Fire unit #1 was delivered to the Army by Boeing Aerospace Corporation in November. During the year four more fire units and seventy-three missiles were delivered for test and evaluation. A European organizational maintenance test set and an operator proficiency trainer evaluator were also delivered to the U.S. test site.

The Roland live firing test started at White Sands Missile Range on 1 February 1978. Early in September operations were suspended to give full support to the nonfiring tests which began in mid-September at Vandenberg Air Force Base, California. The Army conducted fifty firing missions; thirty-four were totally successful; five were partially successful. In addition, one fire unit completed 1,500 miles of roadability tests in Aberdeen Proving Ground, Maryland, with no significant problems.

Five companies submitted proposals for prototypes of the divisional air defense gun. The U.S. Army Materiel Development and Readiness Command selected two for competitive development. The DSARC II was conducted on 22 November 1977. The selection of the Ford Aerospace and Communications Corporation and General Dynamics was announced on 29 November. On 5 January 1978 the DSARC recommended an innovative 29-month "skunk works," "hands-off" development program followed by a three-month combined development and operational test. The Deputy Secretary of Defense approved the recommendation on 6 January. The U.S. Army Armament Research and Development Command signed fixed-price contracts with Ford Aerospace and Communications Corporation, Aeronautic Division for $39,600,000, and with General Dynamics, Pomona Division for $39,135,000.

The general support rocket system is a multiple rocket launcher which will supplement conventional cannon artillery. It also has the potential to incorporate other warheads and terminal homing for attacking point targets, carrying scatterable mines, and smoke. On 16 September 1977 contracts for the initial 29-month validation phase were signed with the Vought Corporation and Boeing Corporation. Contract modifications altering the rocket design were signed in June 1978, extending the validation phase three months. The first carrier vehicle was completed in July 1978.

Development test I of the Pershing II missile was conducted from November 1977 to May 1978. There were five missile flights. The test accomplished all advanced development objectives. The staff made intensive preparations to move Pershing II from advanced development to engineering development. On 18 July 1978 the Army System Acquisition Review Council recommended engineering development for the system. On 21 August the Secretary of Defense issued an amended program decision memorandum directing the Army to limit the Pershing II program to the extended range variant and proceed to a review by the Defense System Acquisition Review Council as soon as possible.

A trade-off analysis was conducted of eight runway penetrator submunitions for the Pershing II system. A government committee was formed to make the final evaluation, and a baseline configuration was selected. The autopilot for the Pershing II remotely piloted vehicle was restructured to support the trajectory requirements of nonnuclear missions. Trajectory simulations were carried out to determine system range, maneuverability, and terminal accuracy. The program ended at the close of fiscal year 1978 because Congress did not provide funds for it.

The Chaparral system, which has been operating since 1969, provides fair weather, low-altitude air defense for division and corps rear. This year efforts centered on alleviating some of its limitations. In May the Army awarded a production contract for 850 Chaparral missiles with improved guidance sections, warheads, and fuses. Twenty more improved Chaparral missiles were prepared to replace older missiles sold to foreign governments. The development of a smokeless motor for the Chaparral missile was nearly completed. It was classified standard and approved for production in September. An electronic identification, friend-or-foe system for the Chaparral launcher was completed, but funding constraints delayed procurement until fiscal year 1979.

The Army continued to improve the Hawk missile system. Prototypes were begun for two product improvement programs and testing began on a third. An improved tracking adjust system was tested successfully in a tactical environment, but there were some reliability problems which the Army will resolve before making a production decision. Planning moved forward on three additional programs to improve the Hawk's tactical capability, reliability, and maintainability. Production contracts exceeding $89.6 million were awarded for ground support

equipment and missiles. Final procurement for the Block I product improvement programs brought the total for Hawk procurement to approximately $122.7 million.

The Stinger missile system went into production following reviews of the completed basic Stinger development program by the ASARC on 20 October 1977 and by the DSARC on 29 November 1977. Basic Stinger was type-classified as Standard LCCA. Before signing the initial production contract, the Army negotiated options for full data rights to pave the way for NATO coproduction. Stinger Arctic test firings were conducted in April 1978 at Fort Greeley, Alaska. Development proceeded on the passive optical seeker technique.

The Hellfire modular missile system progressed smoothly in full-scale engineering development. Qualification tests for all major components neared completion with excellent results. One programmed and three ballistic flights successfully initiated testing. Test bed helicopter performance and load tests were carried out for integration into the missile system qualification and operational tests. The laser seeker competition begun last year succeeded in reducing costs. The Army is considering other seekers for development to fully exploit the potential of the Hellfire system.

The design of the Viper nonportable antitank weapon was frozen on 31 January 1978 and was tested successfully by 30 June. Building hardware was begun to support a prototype qualification test scheduled for early in fiscal year 1979. A production facility contract was awarded in September 1977 for the Viper propellant burn rate additive carborane, and completion is expected in May 1979. A metal parts and assembly facility contract was awarded on 30 September 1978. Equipment should be in place by March 1980.

On 13 January 1978 the Office of the Secretary of Defense approved the close combat antiarmor mission element need statement. This need statement, the first approved among all the services, described general requirements for infantry light, medium, and heavy antiarmor weapons. It identified a number of critical performance requirements based on analysis of projected threat and deficiences of current weapons. The Viper system satisfied the statement's requirements for the light system. The Defense Department directed the Army to examine options for improving or replacing the Dragon and TOW systems to satisfy requirements for medium and heavy systems.

The heavy weapon (TOW follow-on) was labeled the advanced heavy antitank missile system. It will provide a crew-

portable weapon to defeat advanced armored vehicles. It will have increased range and rate of engagement, improved performance in battlefield obscurants, resistance to electronic and electro-optical countermeasures, and can be used against attack helicopters. In January 1978 the advanced heavy antitank missile system project office awarded study contracts to five firms to conduct a four-month evaluation of the technology base, consider trade-offs, and recommend advanced heavy antitank missile system concepts.

A Department of the Army special task force was established on 10 May 1978 to evaluate close combat antiarmor requirements and explore, analyze, and select alternative systems to meet post-1985 needs. The results of the project office study contracts were turned over to the special task force in June. The task force also received concepts for TOW improvement, a ground-launched Hellfire, and a new recoilless rifle.

In August the House and Senate Armed Services Committees reduced close combat antiarmor system funds for 1979 from $8.1 million to $1.0 million. The committee directed the Army to evaluate a ground-launched Hellfire for the TOW follow-on role. Due to limited funds, conceptual work on a Dragon follow-on was dropped.

This year the Army received a $658.7 million aircraft procurement appropriation to relieve the shortage of attack helicopters and to modernize the utility fleet. Plans were to purchase AH–1S attack and Black Hawk utility helicopters and to modify the following airplanes: observation STOL, OV–1 (Mohawk), reconnaissance RU–21 and RV–1, utility U–21 (Ute) and U–8 (Seminole); and helicopters: attack AH–1 (Cobra), cargo CH–47 (Chinook) and Ch–54 (Tarhe); electronic EH–1H, observation OH–6 (Cayuse) and OH–58 (Kiowa), and utility UH–1 (Iroquois).

Developing the advanced attack helicopter (YAH–64) remained one of the Army's highest priorities. The YAH–64 is the first Army attack helicopter designed specifically for day or night, adverse weather, antiarmor missions. It carries a crew of two; the pilot in the rear, the copilot gunner operating the weapons systems from the front seat. Two competing contractors had developed target acquisition designation and pilot night vision systems. This year they completed the design and began the prototype. In September 1978 the first target acquisition designation and pilot night vision systems were delivered to the prime contractor for installation and testing.

In October 1977 the Army exercised the first-year produc-

tion contract option with Sikorsky Aircraft Company for procuring fifty-six UH–60A (Black Hawk) utility helicopters, and with General Electric for T700 engines. Component qualification testing continued. In March 1978, two months ahead of schedule, General Electric delivered the first production gas turbine engine for the UH–60A. In May there was an accident at the Sikorsky factory. Three crewmen and one of the three test prototypes were lost. The accident was caused by failure to reconnect the airspeed sensing devices which control the horizontal stabilator on the tail section after routine overnight maintenance. A warning signal has been added to the design to indicate stabilator malfunction, and the instrument panel has been rearranged. The accident delayed aircraft delivery from August to October 1978.

Structural modification of the first CH–47 (Chinook) in the modernization (CH–47D) program was accomplished. Work on the second and third prototype continues ahead of schedule. The aircraft systems design, the fiberglass rotor blades, and the 110-hour whirl tower tests have been completed. Flight qualification of the CH–47C blades will be finished early in fiscal year 1979. Various other system elements have been tested or are in bench qualification or endurance testing. Plans were made to assure an orderly transition from development to production, and the contract proposal was received.

The purchase of 297 new AH–1S Cobra/TOW aircraft is on schedule. Deliveries started in March 1977. By the end of September 1978 106 new airframes had been delivered. In February deliveries began of 215 improved main rotor blades. The "universal turret" and the wing stores management system were completed.

Efforts were made to obtain Army, Defense, and congressional support for reinitiating the advanced scout helicopter program. In accord with a Headquarters, Department of the Army directive, in August 1978 TRADOC formed a special group to study the subject. The first meeting was on 29 September.

The Army's obligation authority for weapons and tracked combat vehicles for fiscal year 1978 was $1,408.6 million. The funds were slated for improving tank and mechanized forces. and for weapons ranging in size from 155-mm. howitzers to mortars and M2 machine guns.

In February 1978 the first two M60A1E3 (M60A3) tanks of the 296 funded in fiscal year 197T and 1977 were produced at the Detroit Arsenal Tank Plant. Development test III began in

April at Aberdeen Proving Ground, Maryland. Seven tanks will be tested through January 1979. The Army and the Defense Department waived operational test III. Instead, TRADOC is conducting a force development test and experiment at Fort Polk, Louisiana.

Chrysler Corporation delivered eleven XM1 tank pilot vehicles to Army installations between early February and mid-July 1978. Early in the year the XM1 project established liaison offices at Fort Knox, Kentucky, and Fort Bliss, Texas, to support user evaluations of the tanks. Development test II and operational test II began on schedule, there were several planning conferences, and plans were made to introduce the XM1 to the field.

On 31 January 1978 the Army formally announced that the West German 120-mm. smoothbore gun system would be developed in the U.S. for the XM1 tank. A special ASARC meeting approved a 120-mm. gun program in April, but it was delayed by a lack of congressional approval of funds and a satisfactory license agreement with the Federal Republic of Germany.

Fabrication of eight infantry/cavalry fighting vehicle prototypes began with delivery expected early in fiscal year 1979. Two 25-mm. automatic guns, one external, the other self-powered, underwent competitive testing. A decision will be made in January 1979. The initial test firing of the TOW antitank guided missile mounted on the infantry fighting vehicle turret was successful. Procurement funds for the infantry/cavalry fighting vehicle were deleted from the 1979 presidential budget, but Congress restored $39 million for long-lead procurement. The Army finished two studies on this program. The first answered a congressional request by confirming the vehicle's requirement and design, the second answered a Defense request by evaluating less costly derivatives.

On 25 October 1977 a four-year, $49.9 million contract for carriage assemblies for the M198 155-mm. towed howitzer was awarded to Consolidated Diesel Electric Company. The Rock Island Arsenal produced the first two howitzers in June 1978. Five additional howitzers were delivered by September. First article system testing was completed in August. Force development and experimentation tests will be conducted in October 1978.

The XM204 howitzer, the first artillery weapon to use the soft recoil concept, completed development. The process culminated with a development acceptance in-process review on 9 February 1978. Participants agreed that the howitzer had suc-

cessfully completed development and recommended it be type-classified standard. This recommendation was approved on 9 May 1978 by the Deputy Chief of Staff for Research, Development, and Acquisition. At the same time, he gave orders against its procurement.

Development test III of low-rate initial production improved TOW vehicle systems concluded in June 1978. Operational test III, suspended in late 1977 for reliability improvement, resumed in mid-January 1978. It ended successfully in March. A production validation in-process review was held 21 June 1978. The panel recommended the improved TOW vehicle system be type-classified standard and approved for full-scale production. The recommendation was approved and the vehicle was type-classified Combat Vehicle Anti-Tank, Improved Tow Vehicle (ITV) W/O TOW, M901.

Development of a fire integration support team vehicle was directed toward defining the program and obtaining program approval. Emerson Electric Company successfully demonstrated the improved TOW vehicle/fire integration support team vehicle concept in June 1978. Operational capability for the program is in final staffing, and personnel requirements were established.

The squad automatic weapon is a potential replacement for the M16A1 rifle in selected automatic fire missions. Four squad automatic weapons were selected for evaluation: two U.S. (XM248 and XM106), one Belgian (XM249), and one German (HK214–1). Validation phase testing is scheduled to begin at Fort Benning in fiscal year 1979.

The fiscal year 1978 Army appropriation of $1,258.1 million for ammunition procurement covered ammunition hardware, production base support, facility modernization, production improvement, and the annual support of ammunition facilities and layaway production lines. Tank and artillery munitions were the major funding areas.

From 1 October 1977 to 30 September 1978, the government and its contractor, Martin Marietta Aerospace, conducted twenty-seven test firings of Copperhead, the cannon launched guided projectile. Twelve of the first twenty-one firings achieved direct hits on stationary and moving tank targets; the other nine failed to function properly and missed the target. The failures were due to a faulty aerodynamic projectile shape or a gyroscope malfunction. Modifying these deficiencies delayed the remainder of the development program. Of the six subsequent firings, four were successful. Work began on an initial production line for which special production equipment was ordered.

The amount provided for other Army procurement was $1,459.2 million. This category covers three areas: tactical and support vehicles, communications and electronics, and other support equipment.

The stand-off target acquisition system was approved for full-scale engineering development in August 1978. Pending its production, two advanced development systems were assembled for allocation to USAREUR. Both systems will be fielded by January 1979.

Firefinder, a hostile weapons radar locater, consisting of the AN/TPQ–36 mortar locating radar and the AN/TPQ–37 artillery locating radar, should locate enemy mortars, artillery, and rockets with sufficient accuracy and speed to permit effective counterfire. Hughes Aircraft Company is the prime contractor. Both radars have met principal performance requirements. The ASARC approved type-classification standard and full-scale production of the AN/TPQ–36 in December 1977, and a fixed-price contract was awarded to Hughes Aircraft Company in August 1978. Two engineering development models of the AN/TPQ–36 were sent to Europe in September, and will become operational in October 1978. The initial low-rate production AN/TPQ–37 radars are scheduled for delivery to the Army early in 1979.

Contracts were awarded for a number of night vision systems using infrared common modules. These were the man-portable common thermal night sights: AN/TAS–4 (TOW), AN/TAS–5 (Dragon), and AN/TAS–6 (night observation device, long range). The infrared aiming light was type-classified limited standard and will be employed by ranger and special forces units in conjunction with the AN/PVS–5 night vision goggles. Work proceeded on low-cost night vision aids and high-performance third generation image intensifier goggles to permit nap-of-the-earth flight in overcast starlight conditions.

The Aquila remotely piloted vehicle systems technology demonstration was a joint materiel developer/combat developer "hands on" experimentation and testing program. The goal was to understand the role of the remotely piloted vehicle, determine its place in the force structure, and determine how it should be integrated into command, control, and targeting systems. The system was tested at Fort Huachuca, Arizona. It has now undergone extensive testing by Army crews. Target acquisition, artillery adjustment, and laser designation were demonstrated. In March survivability testing at Fort Bliss proved the difficulty of shooting down a small remote piloted vehicle. At the end of

testing a required operational capability was written. Joint technical coordinating group meetings continued and Army-Marine Corps coordination was begun.

High energy laser technology continued development. The Army approved a letter of agreement between TRADOC and the Army Materiel Readiness and Development Command. A number of experimental devices were fabricated and tested. In a joint test with the Navy, laboratory equipment engaged and shot down TOW missiles.

This year the military departments established the joint service small arms program. In May the Army was designated the program's executive agent. The goal is to ensure commonality of small arms requirements among U.S. land, air, and naval forces. Small arms include but are not limited to pistols, rifles, special purpose weapons and ammunition.

Development test II and operational test II began on the XM736 eight-inch binary VX projectile. The tests covered safety, storage and transportation, air drop, soldier evaluation, canister surveillance/transportation, reliability, and phase II firing tables. Plans were made for an integrated binary production facility to support Defense budget actions for production. The facility will manufacture and load one component of type-classified binary munitions. There were studies in site selection and in manufacture, disposal, and process design.

Rationalization, Standardization, and Interoperability

Rationalization, standardization, and interoperability (RSI) policy issues from the highest levels of military and civilian leadership. In his Fiscal Year 1980–84 Consolidated Guidance, the Secretary of Defense stated: "Adequate conventional defense is within NATO's reach at an acceptable cost if we can make the separate national forces of the Alliance work together more efficiently in coalition defense . . . . Simply stated, we need to continue to support NATO rationalization/interoperability/standardization initiatives." On 10 May 1977 President Carter delivered an address to the North Atlantic Council. He emphasized the willingness and desire of the U.S. to promote cooperation with our European allies. In particular he broached the idea of a coordinated long-term defense improvement program. He committed the U.S. to greater cooperation in developing, producing, and procuring defense equipment, and to a genuine "two-way street" in transatlantic defense trade.

In his 6 January 1978 address to the North Atlantic Council, President Carter again stressed our nation's commitment to our

NATO allies. Urging NATO to approve the long-term defense program, he pointed out the increases in U.S. defense spending for the coming year and in U.S. forces for NATO. The White House has consistently supported NATO, encouraging a more forceful role for its European members.

Public Law 94–361, section 802, popularly known as the Culver-Nunn Amendment, stated: "It is the policy of the United States that equipment procured for U.S. forces stationed in Europe under the terms of the North Atlantic Treaty should be standardized or, at a minimum, interoperable with equipment of other members of the North Atlantic Treaty Organization." This statement underlies Defense policy.

Department of Defense Directive 2010.6, on standardization and interoperability of NATO weapons systems and equipment, and Chief of Staff Army Memorandum 77–34–46, on the same subject, amplify and interpret the Culver-Nunn Amendment, and form the basis for Army RSI (recorder status indicator) documents. The following are key policy edits from Directive 2010.6:

The Department of Defense will actively seek standardization and interoperability of weapons systems and equipment within NATO on a priority basis in order to conserve resources and increase the combined combat capability of U.S. and NATO Forces. The DOD components will include NATO standardization and interoperability goals as fundamental considerations in their development and procurement programs for both major and minor items . . . .

DOD research and development (R&D) activities will pursue a mutually cooperative and beneficial policy regarding exchange of information with NATO partners . . . .

In his memorandum of 25 February 1978, the Deputy Secretary of Defense established five Defense RSI priorities. In order they are:

1. Interoperability of command, control, and communications systems. 2. Cross-servicing of aircraft. 3. Interchangeable ammunition. 4. Interoperable battlefield surveillance/target designation/acquisition systems. 5. Standardization/interoperability of components and spare parts.

In their memo of 21 September 1977, the Chief of Staff and the Secretary of the Army set the Army's RSI goals:

1. Fight as part of the NATO coalition—credible defense of NATO

rests on integrated cooperation with our allies. 2. Develop equipment and logistics support procedures for fostering our mutual ability to deter aggression. 3. Support RSI of equipment. Emphasize ammunition compatibility; logistical interoperability; C3; and operating security. 4. Make doctrine compatible with that of our allies. 5. Develop by 1979 a coordinated program for the development, procurement, acquisition, and support of NATO standardization initiatives. 6. Establish by mid-Calendar Year 1978 a program to improve prepositioning of materiel configured to unit sets mix and enhance interoperability.

This year Army RSI efforts centered on the Defense priority areas, planning in support of the long-term defense program, and cooperating with and acquisitioning from our NATO allies.

In the command, control, and communications area, both the U.S. and the United Kingdom offered interoperable equipment satisfying the secure voice requirement to NATO. Two meetings are scheduled on various NATO command and control problems. NATO countries have been invited to submit candidates for the SINCGARS Ground and Airborne radio. The European telephone system is progressing. Finally, copies of the U.S.-French communications interoperability pamphlet published by USAREUR have been distributed.

Interoperability of the U.S. TACFIRE and Federal Republic of Germany ADLER artillery fire control systems has been vigorously pursued. The manager of artillery tactical automated data systems has established a data exchange agreement with the Germans. A memorandum of understanding to continue cooperating on automated artillery systems is in development.

USAREUR and DARCOM have been working with allied national agencies on ammunition interoperability. They want to certify the safety of allied manufactured weapons and ammunition fielded for peacetime use.

A ballistic data exchange revealed that 155-mm., 175-mm., and 8-inch artillery ammunition are completely interchangeable. All nations use U.S. ammunition or foreign ammunition manufactured to U.S. specifications.

The United States recently signed separate interoperability/safety agreements with the Federal Republic of Germany (FRG) and the United Kingdom relating to the following systems:

	Weapon	Ammunition
US/FRG	155-mm. how M109/M109A1	High expl shell/charge
	175-mm. gun M107	HE
	8-inch how M119/M110A1	HE
	105-mm. tank gun M68	APDS/HEAT

	Weapon (cont'd.)	Ammunition (cont'd.)
US/UK	155-mm. how M109A1	HE
	8-inch how M110A1	HE
	105-mm. tank gun M68 * 81-mm. mortar	APDS/HEAT

* Anticipate agreement very shortly

Fielded ammunition was certified safe for peacetime firing. USAREUR will seek similar agreements with the Netherlands, Belgium, Canada, and France.

Eight-inch artillery ammunition exchange/confidence firings between U.S. and German units were conducted in April 1978 at Grafenwoehr. They demonstrated interchangeability between U.S. and German manufactured ammunition.

NATO's major artillery development effort involves 155-mm. howitzers and ammunition. A 155-mm. field artillery ballistics development memorandum of understanding between the U.S. and the Trilateral countries (United Kingdom, Germany, Italy) was signed in March 1978. All new U.S. and Trilateral ammunition is in agreement with it. The new Trilateral FH-70 howitzer and its associated ammunition, and the U.S. M549 (Rocket Assisted Projectile) and M483A1 (Improved Conventional Munitions) projectiles will soon be fielded. They should be compatible.

Initial test programs on the compatibility of new projectiles and propelling charges have been exchanged between the U.S. and Trilateral countries. They are being reviewed nationally to eliminate duplication. Tests of the United Kingdom's propelling charges and the U.S.'s rocket assisted projectiles will begin in 1979 if charges are available.

There was progress in battlefield surveillance, particularly in the stand-off target acquisition system, ground laser designators, and remotely piloted vehicles.

To foster standardization and interoperability of stand-off target acquisition systems with our NATO allies, demonstration and validation were conducted in consultation with principal NATO members, and engineering development has been structured to further these goals. There were demonstrations of systems effectiveness during two REFORGER operations in Europe. U.S. laser designators and seekers are being designed in accordance with NATO STANAG 3733.

The U.S. and Great Britain worked out a memorandum of understanding on exchanging information on remotely piloted vehicles with a view to interoperability. American and United Kingdom requirements for remotely piloted vehicles are quite similar. The United Kingdom is starting a rotary remotely pi-

loted vehicle program; the U.S. is starting full-scale development of a fixed-wing vehicle. There is the possibility of interoperability in sensors, data links, ground control stations, engines, and tactics.

NATO nations have taken several steps to increase the standardization and interoperability of components and spare parts. The Land Forces Logistics Working Party works toward logistics standardization of NATO land forces. The U.S. delegate was invited to discuss logistics interoperability during the September 1978 meeting in Brussels. During a recent U.S./Federal Republic of Germany logistics staff conference the Germans introduced a proposal to provide helicopter maintenance support to U.S. forces. Contracts for helicopter depot maintenance (conversion of AH–1Q to AH–1S and OH–58A to OH–58C) have been awarded to a German firm. This program will enhance in-country potential for wartime maintenance support to U.S. forces.

USAREUR completed testing and is procuring fuel adapters and couplings to ensure interoperability with NATO petroleum tank trucks, tank cars, and fixed facilities. These couplings and adapters provide an easy and safe way to load and discharge commercial German rail cars, and to adapt U.S. POL tankers to German POL systems.

The NATO Long-Term Defense Plan proposed by President Carter was approved by heads of state during the Washington summit of 30–31 May 1978. It is the single most significant step in NATO coalition defense planning in recent years. A comprehensive program covering ten general areas, the program represents a major commitment to defense improvement. The nations agreed to a 3 percent real-dollar increase in defense spending per year, and approved actions in the following areas: readiness, reinforcement, reserve mobilization, maritime posture, air defense, command, control, communications, electronic warfare, rationalization, consumer logistics, and theater nuclear forces. The NATO international military staff and nations are clarifying these actions. A summary of the approved items has been circulated, and nations have been asked to submit comments and plans to NATO. Most actions pertaining to the United States have already been planned in service program objective memoranda.

The joint United States/Federal Republic of Germany staff talks are crucial to doctrinal compatibility between the U.S. and NATO. Doctrinal concept papers completed or under development are shown below:

Concept	Lead	Status
1 Warsaw Pact threat	US	Ratified/signed Nov 76
2 Antiarmor	FRG	Ratified/signed Nov 76
3 Air defense	US	Ratified/signed Aug 77
4 Airmobile operations	US	Ratified/signed Aug 77
5 Mobility/countermobility	FRG	Ratified/signed Aug 77
6 Fire support	FRG	Ratified/signed Apr 78
7 MOBA	FRG	Ratified/signed Apr 78
8 Reconnaissance	US	Ratified/signed Apr 78
9 Terrain (geographic description of FRG)	FRG	Ratified/signed Apr 78
10 NBC defense	FRG	Agreement in principle-Jun 78
11 Night operations	US	Agreement before Feb 79
12 Tactical communications	US	Agreement before Feb 79
13 Air-land operations	US	Agreement possible Feb 79
14 Camouflage/deception	FRG	First draft
15 Electronic warfare	US	First draft
16 Continuous operations	FRG	First draft

The publication of ATP–35, Land Force Tactical Doctrine, was a major step toward developing common NATO tactical doctrine. Other bilateral talks continue between the United States and the United Kingdom.

Two items bear mention as examples of Army willingness to consider foreign systems as candidates for meeting U.S. requirements: the agreement to coproduce the European Roland air defense missile system, and the purchase of more than 8,000 German nontactical vehicles for the support of U.S. forces. In addition, the Federal Republic of Germany will maintain the administrative vehicles. Other NATO countries have indicated interest in similar arrangements for administrative vehicles.

There was major progress in negotiating host nation support agreements with NATO allies. The Office of the Secretary of Defense granted USAREUR blanket permission to deviate from armed services procurement regulations. Legislation is pending before Congress to eliminate contractual provisions which our allies find objectionable. One important agreement negotiated and completed under the armed services procurement regulations deviation is for the German Army Maintenance Plant (Heeresinstandsetzungwerk 800) at Juelich, Federal Republic of Germany, to repair U.S. Army wheeled vehicles.

Most of the actions cited above will continue in coming years. Increased host nation support; greater cooperation with our European allies in research, development, testing, and evaluation; enhanced procurement from off-shore sources; and execution of the Long-Term Defense Plan will all have a tremendous impact on the Army's readiness to fight, reinforce, and sustain its operations in the European theater.

11. Special Functions

Among the closest ties the Army has to civilian life are the domestic activities known as special functions. From its long-time association with civil works programs to more recent environmental protection and energy conservation drives, the Army reflected the tenor of society. Although the two did not always agree on solutions to common problems, the disputes and occasional litigation demonstrated that both were parts of the whole.

Civil Works

In the nineteenth century the Army played a major role in the development and westward expansion of the nation. As time went by, most of the Army's responsibilities shifted to other agencies. It now has only one major civil works responsibility, developing and maintaining the nation's water resources. The Corps of Engineers, which administers civil works programs, investigates and surveys water projects ranging from flood control to recreation.

Including supplements, civil works appropriations for the fiscal year were almost $300 million more than last year, totaling close to $2.8 billion. The following tabulation shows the breakdown (in thousands of dollars):

General investigations	107,046
Construction, general	1,537,820
Operation & maintenance, general	768,870
Flood control, Mississippi River & tributaries	253,081
Flood control & coastal emergencies	18,000
Permanent appropriations	7,470
Special recreation use fees	6,000
General expenses	60,000
Revolving fund	21,525
Alaska hydroelectric power development fund (deferred in FY 78)	5,450
Total	2,785,262

As usual, the largest appropriation was for general construction, which covers a variety of projects. However, a comparison reveals there were no new construction plans or projects during fiscal year 1978, while there were nineteen new plans and twenty-five new projects in 1977.

General Construction Project Breakdown
Fiscal Years 1977 and 1978

	FY 77	FY 78
Preconstruction plans	(138)	(87)
New starts	19	0
Continuations	85	68
Completions	34	19
Construction projects	(295)	(236)
New starts	25	0
Continuations	229	208
Completions	41	28

Several major dam failures, such as the 1976 failure of the Bureau of Reclamation's Teton Dam in Idaho, prompted Congress to pass the National Dam Inspection Act of 1976. The Corps of Engineers received unprecedented congressional authority to inspect all dams, public and private, across the country. In November 1976 the Chief of Engineers presented a report to Congress which included a national dam inventory, responses from state and federal agencies on dam supervision, guidelines for safety inspections, and a recommendation for a comprehensive national safety program.

Meanwhile an Engineer task force reviewed corps design, inspection, and evaluation procedures related to dam safety. In response to a request from the President, the corps prepared a review of management practices affecting safety. It also established procedures for upgrading corps dam projects with potential safety hazards in light of modern standards and technology.

In December 1977 the corps initiated a program under the National Dam Inspection Act to inspect more than 9,000 nonfederal dams whose failure would cause heavy damage. Selection and scheduling of the inspections were determined in agreement with state officials. Barring unforeseen delays, the program should take four years to complete. This fiscal year there were more than 1,790 inspections.

Many corps dams were used for hydropower, irrigation, or as reservoirs. The Corps of Engineers operated and maintained a total of sixty-seven hydropower projects, with 313 generating units and a potential capacity of 17.8 million kilowatts. That total was about 11 percent of the Federal Energy Regulatory Commission's estimate of the conventional hydroelectric power potential of the United States (excluding Alaska and Hawaii), approximately 3 percent of U.S. generating capacity, and over 4 percent of U.S. electric energy.

During the year the corps installed twelve new units and added 1.4 million kilowatts to its capacity. Five units were added at the Chief Joseph project on the Columbia River in Washing-

ton, each with a 95,000-kilowatt capacity. Six new units with 135,000-kilowatt capacities boosted the output on the Snake River, Washington. Three went to the Little Goose plant, and three went to Lower Granite. A 61,000-kilowatt unit went to the Laurel River hydroplant in Kentucky.

Over 54,000 kilowatts were added by rewinding and improving the capacity of generators at four other plants. Five new projects were under construction, with seventeen units that will have an installed capacity of 902,000 kilowatts. Nineteen units were being added to four plants. Their capacity is over 1.7 million kilowatts. The year's largest construction contract was awarded to S. J. Groves, Peter Kiewit, and Granite Construction; they will build jointly the Bonneville Second Powerhouse in Oregon and Washington.

Among major construction efforts continued during the fiscal year were the Tennessee-Tombigbee Waterway in Alabama and Mississippi and the Red River Waterway in Louisiana. Developing and maintaining the U.S. navigation system was an important corps function, encompassing about 25,000 miles of inland and intracoastal waterways.

The corps continued its training programs in water-related land resources development for foreign engineers and researchers. During the year twenty-five trainees participated from Argentina, Brazil, India, Korea, the Philippines, and Taiwan. They were trained in planning and executing dredging works, harbor engineering, river basin planning, flood hydrology and protection, coastal engineering, and planning, designing, and maintaining hydroelectric powerplant equipment.

Environmental Protection and Preservation

This fiscal year the Army spent $128.8 million on environmental programs, almost $20 million less than last year. However, expenditures in fiscal year 1979 were projected at almost $253 million, and the 1980 budget request contemplated over $216 million for environmental projects.

The budget increases were prompted by a letter, the Deputy Administrator of the Environmental Protection Agency (EPA) sent to the Army and other agencies in October 1977. It discussed failures to comply with federal and state standards to reduce air and water pollution. The 1977 amendments to the Clean Air Act and the Federal Water Pollution Control Act for the first time required federal facility managers to conform to state and local government procedures.

With over 130 major and 1,200 minor installations in the

United States, the Army found itself under pressure. At the third worldwide Army environmental conference at Colorado Springs in March, the Chief of Engineers called for renewed efforts and pledged additional funding to environmental program managers. He ordered an immediate survey of all installations to validate known or suspected pollution sources and approved placing the Army pollution abatement program under the Huntsville, Alabama, division. Other Engineer districts were to provide full nonreimbursable engineering services to all major commands and installations constructing pollution abatement projects.

As a result special pollution surveys were conducted of 129 major commands and installations and 1,153 Army Reserve centers. The surveys identified over 300 problems requiring further study to determine if pollution standards were violated and to evaluate the corrective measures that would have to be taken. The studies were estimated to cost $3.4 million, of which $2 million was available and obligated before the end of the fiscal year. Eighty-two pollution abatement projects, estimated to cost $157 million and including twenty-five due to the survey, were placed in the fiscal year 1980 military construction program.

Despite the surge of interest and funds, in August the Secretary of the Army expressed concern about whether the standards could be met. He offered to send Army representatives to meet with the EPA staff to discuss the Army's problems. Since several states had already filed suit against the Army under the old pollution violation laws, the Army faced the prospect of becoming the defendant in an increasing number of cases.

One of the main problems confronting the Army and the nation was disposing of liquid wastes. Recycling wastewater and the organic nutrients it contains has interested EPA since the Federal Water Pollution Control Act Amendments of 1972. In 1977 Congress provided additional incentive to use the land treatment process, and EPA issued a policy statement strongly urging its use. EPA indicated that sanctions might be applied when land treatment was unfairly dropped from consideration.

The Army was heavily involved in land treatment in both its civil and military programs. In civil works the Corps of Engineers researched and participated in land treatment through the urban studies and reservoir recreation area programs. Under the urban studies program the Army considered wastewater management planning as part of total resources management, and land treatment was one of the alternatives. In reservoir recreation areas the Army broadened land treatment. In the

fiscal year ten systems were planned, designed, and/or constructed and ten more were under consideration.

On military reservations or installations the Army was using ten land treatment systems. Similar facilities were planned for Camp Bonneville, Washington, Schofield Barracks, Hawaii, and Helemano, Hawaii. At Fort Polk, Louisiana, Fort Dix, New Jersey, and Camp Bullis, Texas, planners were studying advanced treatment methods.

The Army continued researching improved land treatment techniques using slow infiltration, rapid infiltration, and overland flow design systems. The center for such research was the Cold Regions Research and Engineering Laboratory at Hanover, New Hampshire. Supplementary efforts were conducted at the Waterways Experiment Station, Vicksburg, Mississippi and by contract at various universities and by the Surgeon General of the Army and the Agricultural Research Service.

The two principal research objectives were improving criteria for designing land treatment systems, especially by monitoring the management and performance of existing systems and greenhouse and field simulation studies; and developing a computer model reflecting both the optimum design and the most cost-effective method. The model would assess data on moisture flow through the soil and soil solution chemistry and biology. Thus far research has proceeded on schedule and should be completed by fiscal year 1980.

As a result of the research five draft technical letters have been prepared on infiltration capacity measuring procedures, overland flow design criteria, agronomic design guidance for slow infiltration systems, design criteria for forest systems, and regional site selections. They will be distributed when completed.

The Army, EPA, and the Department of Agriculture have together prepared a manual on process design for land treatment of municipal wastewater. The Army and EPA were sponsoring training courses on land treatment. They were prepared at Cornell University and will be given at various schools. They were also developing a computer model for planning the design, cost and effectiveness of land and conventional wastewater treatments.

Efforts to expand land treatment were impeded by the lack of general acceptance of the method. The Army and EPA have agreed to develop a demonstration program to publicize its financial, health, and environmental safety benefits. During the past year the Army tried without great success to arrange cooperative efforts with civilian communities for disposing of

wastewater on federal or nonfederal lands. However, several promising sites on military lands will be considered for further evaluation.

In March the Army completed on schedule the dredged material research program authorized by the River and Harbor and Flood Control Act of 1970. The program investigated the environmental impact of dredging operations and the disposal of dredged material and considered alternatives which were technically, environmentally, and economically feasible. The Army has increased its knowledge of the processes and mechanisms involved in environmental impacts, and, more importantly, worked out methods for predicting effects before a dredging project is carried out or a permit issued. District planners and designers now have the means to evaluate various methods and to reduce damage from conventional disposal operations. The research also dispelled many uncertainties about the practicality of new disposal methods.

Congressional amendments of 1977 to the Federal Water Pollution Control Act required the Corps of Engineers to obtain a water quality certificate from a state before discharging dredged or fill material into American waters, except when Congress specifically authorized or appropriated funds for a construction project in light of an environmental impact statement considering the effects of such discharge. For the first time the states had regulatory powers over dredged material discharged by the corps. Hence the corps would have to meet state disposal and water quality requirements whenever dredging operations became necessary.

The military environmental quality technology program was funded at $8 million as a result of a congressional reduction of $2.36 million. During the year efforts were directed at developing environmental effects data, abatement technology for munitions plants, automated procedures for preparing environmental impact assessments, and reducing noise pollution from Army operations. Two processes for treating wastewater from TNT production and two for treating plant wastewater from load, assembly, and pack operations were under study to determine their economic practicability. Laboratory tests on three monitoring instruments of pollutant levels at munitions plants led to the installation of prototypes at an operational facility for on-site testing.

The Army also took steps to establish interim water quality standards for wastewater from manufacturing plants producing TNT compounds and white phosphorus. The standards were

based on findings of the effects of variable dosages on aquatic and mammalian life. Long-term testing of the effects of nitroglycerine and 2.4-dinitrotoluene on laboratory rodents indicated they were carcinogenic. As a consequence interim water quality criteria have been recommended to reduce that potential hazard.

To help the Army respond to future demands for environmental impact assessments required by law, the environmental technical information system was expanded. The system should be in use by the end of fiscal year 1979.

Each year the Secretary of the Army presents an environmental quality award to the installation making the best effort to preserve its environment. The 1977 award went to Tobyhanna Army Depot, Pennsylvania, for its conservation and reforestation activities, its efforts with EPA to cement electroplating wastes, and its thorough environmental education, training, and information programs.

The Army Energy Program

In the field of energy conservation, the Army continued using the consumption totals of fiscal year 1975—approximately 275.4 trillion British thermal units (BTU's)—as the standard of comparison. Despite a severe winter, the Army reduced its consumption to approximately 256.7 trillion BTU's, a saving of about 6.8 percent. As in the previous fiscal year, the Army made savings in all energy sources except purchased electricity, steam, and aviation fuels. Installations used 84 percent and vehicles 16 percent of the total energy consumed. The following table compares fiscal years 1975 and 1978:

Army Energy Consumption
(in trillion BTU's)

Installation Operations	FY 75*	FY 78	Percent Saved
Purchased electricity	86.27	88.87	−3.01
Natural gas	45.01	36.07	19.86
Liquefied petroleum gas	2.27	1.95	14.10
Coal	35.04	28.54	18.55
Purchased steam	.68	.75	−10.29
Petroleum heating fuels	61.50	58.60	4.72
Subtotal	230.77	214.78	6.93
Mobility Operations			
Aviation fuels	12.93	12.99	−0.46
Motor gasoline	16.05	15.11	5.86
Diesel fuel	15.66	13.84	11.62
Subtotal	44.64	41.94	6.05
Army total:	275.41	256.72	6.79

* Minor adjustments in the baseline figures for FY 75 are due to mission and installation transfers, with their FY 75 consumption baseline, between the military departments, and some minor error corrections.

To help the Army reduce its energy use, a plan was initiated in 1976 to develop a base-wide use and control plan for each installation. The plan permitted the Army to determine where cuts could be made and what the costs would be. This year studies were under way at thirty-seven installations, including seven Defense facilities and the U.S. Military Academy, to investigate all known types of energy conservation that were reasonable, practical, and economical.

At several installations the Army was using an energy monitoring and control system of sophisticated automatic control and surveillance devices that informed operators precisely how much and where energy was being consumed. The Army has three such systems in use, three under contract, and has asked for seventeen more under the military construction program for the next three fiscal years. The Army expected the dollar savings in energy and manpower to match the cost of the systems in as little as two years.

In February 1978 the Army advisory group on energy and the Chief of Staff approved an Army energy plan developed through staff input and contractor support. The general features of the plan included portraying the world, national, and Department of Defense energy environment in which the Army must operate; identifying medium-range (1985) and long-range (2000) Army objectives and goals; summarizing existing and new Army programs necessary to meet these goals; and projecting energy costs and consumption for the year 2000.

Taking this information into consideration the plan established specific goals for 1985 and 2000. First, energy consumption would be reduced by 45 percent by the year 2000 by cutting back vehicle fuel usage 10 percent by 1985 and holding at that level until 2000, by lowering energy use at facilities by 25 percent by 1985 and by 50 percent by 2000, and by expanding information and incentive programs. Second, the Army would cut back its dependence on nonrenewable and scarce fuels by the year 2000 through a 20 percent increase in the use of synthetic and/or alternate fuels for vehicles and by raising their efficiency by 15 percent, by eliminating the use of natural gas, and by reducing the use of heating oils by 75 percent. And third, the Army would strive for a position of leadership in the pursuit of national energy goals. Assuming the next two decades are relatively stable, all these objectives could be attained without sacrificing overall readiness.

During the year there were two major developments in the distribution of bulk petroleum fuels. At the end of March the

Vice Chief of Staff approved a staff study on bulk petroleum fuels distribution in a theater of operations. A program advisory group was set up to ensure that the study recommendations were carried out. The Deputy Chief of Staff for Logistics became the Army focal point for integrating all facets of the fuels distribution system; a project office for fuels was established to handle equipment and readiness; and a project officer from the Office of the Deputy Chief of Staff for Research, Development, and Acquisition was appointed to oversee funding to support materiel acquisition.

In the second development, in August the Deputy Secretary of Defense approved an Army proposal to transfer the Zweibrucken-Huttenheim pipeline system in Germany to NATO on 1 January 1979. This should improve overall bulk petroleum support to NATO forces in central Europe.

Research and development activities explored all avenues that might lead to the use of less energy, whether by adapting energy saving devices to present equipment or vehicles, by managing or controlling consumption, or by building more efficient facilities. A computer-aided energy analysis system was developed, for example, to predict energy consumption in buildings by simulating heating, ventilating, and air conditioning systems, where climate, type of construction, and building orientation are considered. The Building Loads Analysis and System Thermodynamics (BLAST) program, as it was called, also computed life-cycle costs on the basis of user-supplied or program default capital cost, maintenance cost, operating cost, and utility rate schedules. The BLAST system has been made available to other service and civilian agencies. To assist in the management of energy use the energy consumption, reporting, and analyzing system, a technique to forecast energy consumption, has been provided to facilities engineers.

Military standards to determine the feasibility of employing waste-derived fuel at installations were under development; technology evolving from that process has already been applied to construction projects at Forts Monmouth and Bragg. Two solar energy projects were in operation at Fort Hood, as reported in last year's summary, and, in addition, ten solar projects were under construction at various installations and fifty more were in the design phase.

Early in 1978 the Army participated in a joint Department of Defense-Department of Energy study on cooperative energy ventures. As a result the Army has been given a major role in photovoltaic development and utilization, solar heating and cool-

ing of Defense buildings, a wood-fired central heating plant, a pyrolysis plant for converting wood to liquid fuels, establishing energy "showcase" installation, and synthetic fuels. Work on all had begun by the end of the fiscal year.

The Army nuclear power program suffered when the power barge *Sturgis* was withdrawn from Ft. Belvoir in June, decontaminated, and towed to Savannah, Georgia, to become part of the James River Reserve Fleet in September. The *Sturgis* was prepared for long-term storage by reworking its hull and installing intense intrusion and humidity control systems.

Army Litigation

The Army engaged in numerous court actions during the fiscal year ranging from claims against the government for damages, injuries, or deaths allegedly caused by official experiments or negligence to labor and contract disputes.

Suits rising from LSD experiments continued being filed in U.S. district courts. There was also litigation based on injuries allegedly suffered in a 1950's nuclear test. Money damages were being sought against the United States and several individual defendants.

The case of *Mabel Nevin et al.* v. *United States* was being tried in the U.S. District Court, Western District of California. The family of a man who was 75 at the time of his death filed an $11 million suit claiming his demise was caused by negligent transporting, disbursing, and testing of a bacterium in San Francisco Bay in 1950. The victim died of infection two months after the Army had conducted bacteriological warfare tests in the area to determine susceptibility to offshore bacteriological attack.

In a similar case, *Betty Palmer* v. *United States,* the plaintiff filed suit for $3.6 million in the U.S. District Court, Eastern District of Arkansas, claiming that her husband, an employee of Pine Bluff Arsenal, had died from nerve gas poisoning. The suit was dismissed because she had failed to file an administrative claim under the Federal Torts Claims Act. If she refiled, it would apparently have to be under the Federal Employees Compensation Act.

A number of defamation actions, characterized variously as constitutional torts, common law torts, or violations of the Privacy Act, were filed during the year. If brought to court, the cases will test the limits of official immunity as clarified in the recent Supreme Court opinion in *Butz* v. *Economou.* The court rejected the absolute immunity defense of federal officials in

constitutional tort lawsuits and held that such officials were entitled to qualified immunity, but for certain "exceptional situations." The individually sued defendants in the case of *Berlin Democratic Club* v. *Brown* were among the first to attempt to set forth "exceptional situations" entitling government officials to absolute immunity. At the end of the fiscal year the Court of Appeals for the District of Columbia rejected all motions before it and certified argument solely on the absolute immunity defense.

The constitutional challenge to the Dual Compensation Act of *Puglisi et al.* v. *United States* was resolved in favor of the government in April when the Supreme Court refused to review it. The constitutionality of discharging service members for homosexual tendencies was also under consideration. One case involved a purported marriage of a transsexual. A due process challenge to the immediate release of reserve officers sentenced for felonies by civil courts was defeated in the case of *Alberico* v. *Alexander* in the U.S. District Court of the District of Columbia. The plaintiff's appeal was pending at the end of the fiscal year.

Litigation continued on cases involving passing over officers for promotion by boards without reserve officers and on alleged breaches of enlistment contracts.

Several Army officers have brought class actions for release from their active duty obligation after participating in the Armed Forces health professional scholarship program. The program was designed to replace the draft and to encourage physicians to enlist through financial assistance in medical school and residency training. The actions charged that the Army did not provide the variable incentive pay or promotion opportunities it had promised and failed to furnish modern equipment; they also alleged that there were ambiguities in the contracts. One physician went so far as to unilaterally terminate his commission in protest, enter private practice in the state of Washington, and refuse to obey orders assigning him to Korea. He was subsequently returned to Walter Reed Medical Center, charged with violations of the Uniform Code of Military Justice, and was awaiting a general court-martial at the end of the year.

The Army had to contend with increasing numbers of equal employment opportunity class actions. Investigating these cases required a great deal of time and effort. During the year the Army had fifteen actions in progress. One, *James* v. *Schlesinger*, was decided in favor of the United States on whether the plaintiff had the right to sue. Two others involving black employees in Alabama were being settled out of court. Monetary relief to the

class members, personnel administrative reforms, and payments of attorneys' fees should result in substantial costs to the Army.

Foreign civilian personnel cases were also on the rise, principally in Italy. One significant decision by the Italian Supreme Court of Cassation held that the United States was not liable for retroactive cost of living allowances for the years they were not paid as separate pay items to Italian employees of the Army. That decision should bear heavily on a number of cases pending before lower Italian courts.

The American Federation of Government Employees (AFGE) brought suit against the Army challenging a contract award to a private firm to provide instrument training to undergraduate rotary-wing pilots at Fort Rucker, Alabama. This function was previously performed by federal employees. The union charged that the contract was an illegal personal services contract; that the Army failed to follow its own and other government regulations, including those on comparative costs and analyses; that the Department of Labor issued an erroneous wage determination under the Service Contract Act; that the Army violated the Veterans' Preference Act; and that the Army attempted to evade Congress' moratorium on contracting out certain services. The government's motion to dismiss and for summary judgment was pending.

The court dismissed a challenge against the Army for contracting out various stevedoring functions at Bayonne, New Jersey, which had been carried out by government employees. The AFGE has filed an appeal.

Teachers working for the Department of Defense in overseas dependents schools sought the same entitlements, primarily quarters allowances, received by teachers living in the United States. Three suits were pending charging the different pay systems violated statutes and the Constitution. Since the litigation crossed service lines, the Defense General Counsel's office assumed supervisory responsibility for the government's defense.

The Army was appointed executive agent for the Department of Defense in the case of the *National Lawyers Guild* v. *Attorney General*. The Judge Advocate General's office has handled requests for Defense and Army documents in the action and coordinated requests for Navy and Air Force documents.

During the fiscal year the Army had to file affidavits in an increasing number of lawsuits to protect Army classified documents in the custody of other government agencies. The Army was named as a defendant in only a few of the suits. In two suits

brought against the Central Intelligence Agency, the Secretary of the Army had to assert the privilege of protecting state and foreign secrets in Army-originated documents in CIA files.

The number of claims recovery actions under the Medical Care Recovery Act reached a record high during the year. Collection actions resulted in a return of over $4.6 million for calendar year 1977, an increase of $111,000 over the previous year.

Several favorable decisions by state insurance commissions have enabled the United States to recover medical care costs under various no-fault insurance laws and the medical payments clause of the injured party's insurance policy. State decisions in Florida and Kentucky have spurred U.S. attorneys to initiate actions to recover additional payments when no-fault insurance laws were in effect.

Medical malpractice suits were on the rise throughout the nation, and the Army had eighty-five such suits pending at the end of the fiscal year. The Army sought to hold down the number of suits by disposing of them at the administrative level. Several large judgments in non-Army malpractice cases led to the settlement of similar Army cases.

In the case of *Massey et al.* v. *United States*, the District Court of the Southern District of Georgia found the United States liable for damages resulting from an ammunition plant explosion that caused twenty-nine deaths and fifty injuries. Even though the plant was privately owned and operated, the owner was fulfilling a government contract. In the first suit, the plaintiff received a judgment of $450,000. A motion for reconsideration has been filed. An appeal would be made to the Fifth Circuit Court of Appeals.

For the most part actions under the Freedom of Information Act concerned the release of historical or political documents. During the fiscal year the use of the Freedom of Information Act to gain access to technological data with commercial value came to the fore. In *Siemens Corp.* v. *United States*, the firm sought highly sophisticated electron beam lithography data which has great industrial and military importance. The case was pending.

Contract disputes were another constant of Army litigation this year. In the early 1970's high inflation rates and the 1972 Presidential wage and price freeze caused strain between the United States, certain contractors, and their subcontractors. In the case of *Libby Welding Co.* v. *Electric Machinery Manufacturing Co.*, being tried in the U.S. District Court, Western District, Missouri, Libby held government contracts and subcontracted

for supplies. Because of the wage and price freeze and inflation, some subcontractors refused to perform at the contract prices. The Army Contract Adjustment Board granted Libby $4.6 million to satisfy the subcontractors, but Libby and Electric Machinery could not agree on a settlement price. Libby then sued Electric Machinery to establish an equitable figure. Since Libby had no real economic stake in the suit, the Army asked for and secured the intervention of the Department of Justice to protect United States' interests.

The Army's vulnerability to lawsuits under the liberal U.S. legal system augured that the Judge Advocate General's office would not be idle in the years ahead.

12. Summary

In stressing force readiness, the Army was aware that the next war might well be the most lethal, intense, and complicated war in its history. The logical opponent would be the members of the Warsaw Pact, whose forces are formidable both in quantity and quality. Although the Army could not hope to match the foe in Europe, it did attempt to provide its troops with the best organization, training, and equipment available and to sustain a credible margin of readiness to deter open warfare.

In an era of spiralling inflation, the Army had to make hard choices over the distribution of funds and resources. Although Europe received first priority, the Army had to maintain forces in other areas at home and abroad.

Among the gravest problems the service faced this year were retaining trained personnel in the active Army and attracting high-caliber recruits to the reserve components. The volunteer system obliged the Army to rely on a high degree of leadership at senior and junior levels and financial and personal incentives to compete with the civilian world. Despite strong efforts to improve the quality of service life, the personnel outlook was unlikely to alter greatly in the near future unless there was a crisis or the draft was reinstated.

Internally, the Army sought to bolster control over its resources through better management, greater use of computers and other automated equipment, and doctrine that would permit the best use of assets while preparing for the changes the next decade will bring. The Army conducted a vigorous planning, research, and development program to fulfill these goals.

Some logistical shortages were reduced, but the constant introduction of new weapons, equipment, and vehicles reflecting technological advances was bound to create new shortages to replace the old. Obsolete items were replaced as funds permitted. As long as there are no serious stock imbalances, the Army will maintain a relatively sound peacetime logistical position.

Looking back, the fiscal year was much like its predecessor. The Army continued strengthening its internal structure, reducing waste and duplication, and concentrating on force readiness. Under the circumstances it made marked improvements in many areas. Prospects for the future, however, were not altogether optimistic. Many basic problems defied easy solutions, and had to be referred to higher levels.

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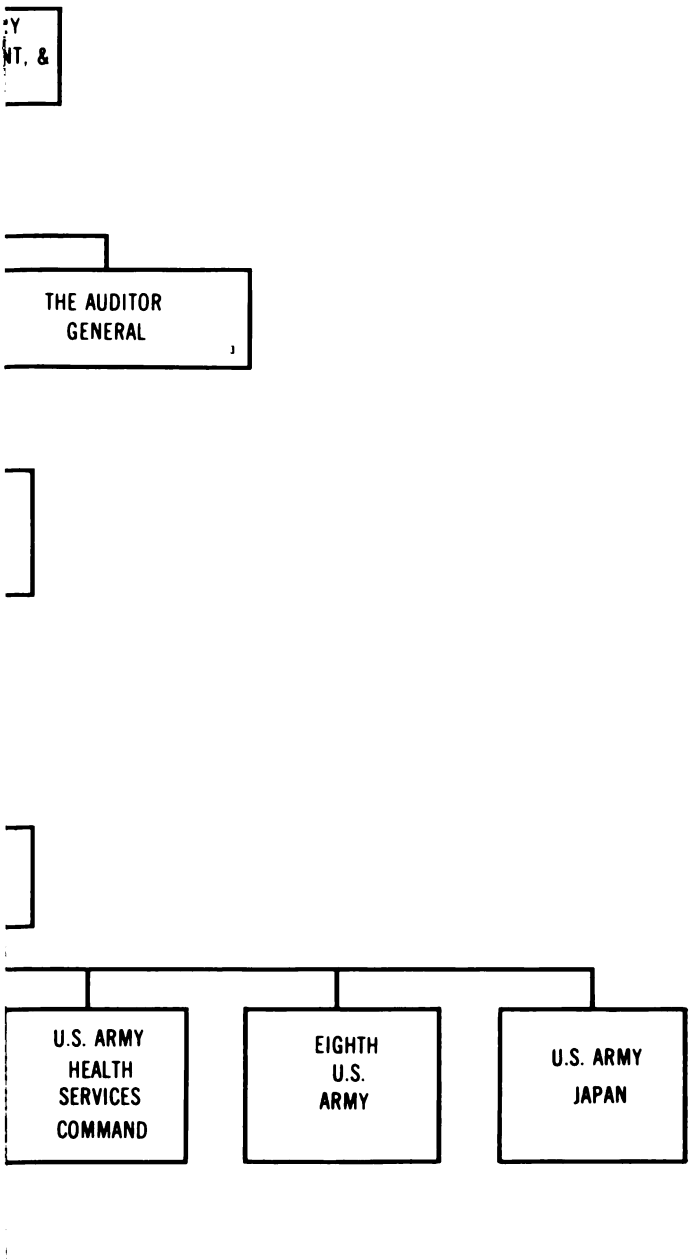
☆ U.S. GOVERNMENT PRINTING OFFICE: 1980 O—306-110



AS OF 30 SEPTEMBER 1978