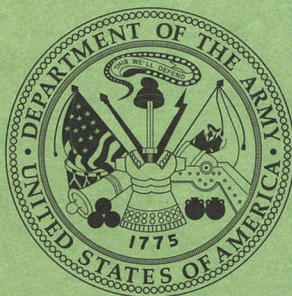


Department of the Army Historical Summary

Fiscal Year 1999



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

Department of the Army Historical Summary Fiscal Year 1999

by

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DEPARTMENT OF THE ARMY
HISTORICAL SUMMARY

FISCAL YEAR 1999

1

Introduction

The Army was emerging from a decade of reorganization and doctrinal change as it entered the 1990s. By the late 1970s, the All-Volunteer Army was displaying persistent problems, causing Army Chief of Staff General Edward C. Meyer to call it a “hollow force” in his May 1980 testimony before the House Armed Services Committee. Army leaders faced the grim reality that half of all new enlisted personnel either scored in the lowest acceptable category of the Armed Forces Qualification Test or had failed to complete high school, and were entering a force characterized by poor morale and severely limited resources. From that low point, Army leaders resurrected the force during the 1980s as the restructured Army of Excellence, honing the AirLand Battle doctrine of maneuver warfare espoused in the 1982 Field Manual (FM) 100-5, *Operations*, and procuring a substantial array of new hardware to replace aging equipment. Rigorous attention to recruiting, training, and retaining high-quality personnel, combined with significantly increased defense spending, enabled the Army to become a far more formidable force. By the end of the 1980s, the Army was clearly capable of meeting the threat posed by the Soviet Union’s conventional forces and fulfilling the other requirements of the National Military Strategy. In the decade between fiscal year (FY) 1989 and FY 1999, the maturation and fiscal adaptation of the reform policies of the 1980s continued and were tried by fire as a new international order emerged following the disintegration of the Warsaw Pact and collapse of the Soviet Union. The sudden end of the Cold War and the appearance of new regional and global threats during the 1990s presented the Army with substantial challenges, even as the success of recent reforms offered a model for the adaptations required to meet them. While diplomats, politicians, and economists explored the ramifications of the developing post-Cold War international order, the United States Army began preparing to enter the twenty-first century. By the decade’s end in FY 1999, the Army had designed two new force structures, Force XXI and Army After Next (AAN), as successors to the Army of Excellence architecture, and it had initiated the programs required to create those organizations.

In June 1990, Secretary of Defense Richard B. Cheney reluctantly submitted a plan to Congress that outlined a 25 percent decrease in the size of the armed services. The plan, a response to growing budget deficits and the rapidly diminishing threat posed by the Warsaw Pact, called for the reduction of the active Army from eighteen divisions to a base force of fourteen divisions by 1995. The base force design abandoned the large-scale forward positioning of the Cold War in favor of domestic basing and enhanced force-projection capabilities, enabling a flexible and timely response to crises around the globe while reducing military expenditures. President George Bush announced his support of this plan, the first structural adaptation of the armed services to the approaching end of the Cold War era, on 2 August 1990.

Iraq launched a successful invasion of Kuwait that same day. The Army soon responded to that aggression by deploying to Saudi Arabia in conjunction with a multinational coalition. As it entered FY 1991, the Army that was created during the Cold War to defeat the Warsaw Pact in the complex terrain of Europe prepared for battle against an adversary using Soviet-style weapons and tactics in open country that resembled its own training facilities at Fort Irwin, California. Operations DESERT SHIELD and the DESERT STORM offensive that followed revealed both the success of the previous decade's reforms and the weaknesses remaining in the force they produced. American soldiers smashed the Iraqi army in a hundred-hour ground campaign, following weeks of preparatory air strikes that capitalized on improved guided munitions and unchallenged aerial supremacy. But the forces supporting the Gulf War effort, previously identified by Secretary Cheney as straining U.S. financial resources in time of peace, took months to prepare and deploy for combat. Their one-sided victory owed much to the availability of secure staging areas and Iraq's failure to mount any substantial diplomatic or military opposition to the required buildup. Few military planners would be optimistic enough to depend on a repetition of those auspicious circumstances in future contingency operations.

But before FY 1991 ended, the Gulf War had become the obvious model for large-scale conflicts in the foreseeable future. On 1 July 1991, the Warsaw Pact recognized the reality of its collapse by officially disbanding. The failure of an August coup attempt by hard-line Communist party leaders in Moscow, and the prominent role of Russian President Boris Yeltsin in its suppression, underscored the deterioration of Washington's Cold War rival. On 25 December 1991, the Soviet Union ceased to exist, replaced that day when eleven of the twelve remaining Soviet republics joined the Commonwealth of Independent States established by Russia, Ukraine, and Belarus on 8 December. The bipolar world that had emerged in 1945 disappeared, taking with it the superficial stability long imposed by superpower rivalry.

In the absence of the restraint enforced by superpower patronage and the threat of global escalation, regional conflicts like the Gulf War could only become more likely. In the eyes of American strategists, the rapidly approaching twenty-first century would be characterized by the threat of such conflicts, the need for peacekeeping and peace enforcement missions, and counterterrorist operations, rather than preparations for total war in Western Europe. The Army of the Cold War era, effective as it was in Operation DESERT STORM, was not optimized for those tasks.

The truth of that bleak forecast was demonstrated in FY 1992, even as Army planners evaluated the lessons of the Gulf War. Within the Commonwealth of Independent States, newly established governments struggled over boundaries and the renewal of ancient cultural and political rivalries. Afghanistan erupted into another round of internal turmoil. Croatia, Slovenia, and Bosnia all seceded from Serb-dominated Yugoslavia, leading the United Nations (UN) to support the use of force to end Bosnian bombardment of Sarajevo. Iraq obstructed UN weapons inspections mandated by the Gulf War peace accords. The Army needed to adapt to this new strategic environment.

Although the National Military Strategy released in January 1992 indicated the direction American leaders had chosen in light of the new reality, the base force concept supported by President Bush amounted to a modest reduction in size rather than a major realignment of the Department of Defense (DOD). In March 1993, the incoming administration of President William J. Clinton initiated a thorough review of the armed services and American strategy from the bottom up to guide a more comprehensive response.

Secretary of Defense Les Aspin released the *Report on the Bottom-Up Review* in October 1993. The results of the seven-month investigation shaped defense planning and Army policy through FY 1999, preparing the armed services for the challenges of the twenty-first century. Establishing the ability to face two nearly simultaneous regional conflicts as the measure of acceptable military capability, the review identified five primary threats to U.S. security in the post-Cold War era. Those threats were the proliferation of weapons of mass destruction; regional crises caused by the aggression of a major regional power; conflicts arising out of religious or ethnic animosities, subversion, or state-sponsored terrorism; dangers to democracy and reform in the former Warsaw Pact nations or elsewhere; and potential dangers to the United States from domestic economic failure.

As the Army examined the implications of the review in early FY 1994, it continued to execute the force and budget reductions initiated in the late 1980s. The Army's Total Obligation Authority dropped 36 percent between FY 1989 and FY 1994, despite a 300 percent increase in

operational deployments since the end of the Cold War. In an attempt to preserve crucial modernization programs such as the RAH-66 Comanche helicopter and the Crusader artillery system, the Army had already accelerated previously planned personnel reductions.

Those reductions continued under the guidance provided by the *Report on the Bottom-Up Review*. The document called for a decrease to ten active and “five plus” reserve component divisions by FY 1999, with a total reserve component strength of 575,000 by that year. Increased pre-positioning of supplies and improved battlefield mobility would enable the reduced Army to deliver decisive fire power earlier than had the Army of the Gulf War, despite a continued decline in forward stationing.

The review recognized the existence of an ongoing revolution in warfare driven by information technology and other recent developments, which in turn suggested the creation of new operational and tactical concepts to exploit the emerging capabilities. Among Army systems specifically mentioned as exemplars of what came to be called the “Revolution in Military Affairs” were those associated with the development of ballistic missile defense, along with the AH-64 Apache Longbow attack helicopter, the advanced fire-and-forget version of the Hellfire missile it would carry, and the RAH-66 Comanche armed scout helicopter. Such systems used their ability to rapidly collect, process, and respond to information to maximize the impact of relatively minor destructive power across all levels of warfare. An overhaul of the procurement system and the introduction of commercial practices and technologies from the civilian world would, it was hoped, reduce the time requirements and costs of those new systems and extend the promise of the revolution into Army administration. Like the rest of the DOD, the Army would place renewed emphasis on quality-of-life issues under the recommendations of the *Report on the Bottom-Up Review* to attract and retain the high-quality personnel the armed services required to pursue this technological revolution.

The National Military Strategies of FY 1995 and FY 1997 built upon the foundation of the Bottom-Up Review and the Army’s response to it. As FY 1994 unfolded, the Army Staff began developing plans for an information-age Army structure called Force XXI. The belief that information would be almost as important as ammunition in future conflicts dictated the shape of Force XXI. To achieve victory, the futuristic force would overwhelm its enemies by integrating information technology and weapons systems in a process called *force digitization*. Force XXI would use that integration to establish a common awareness of the situation, coordinate activities throughout the zone of combat in real time, accelerate the pace of battle, and optimize the Army’s responsiveness. As the Army adopted this structure and the concomitant technologies and doctrine, it would begin to

operate as an increasingly cohesive system-of-systems, capitalizing on its full range of capabilities.

Force XXI originated in the AirLand Battle doctrine of FM 100-5 as it was reinterpreted in 1993 and further developed in the August 1994 release of Training and Doctrine Command (TRADOC) Pamphlet 525-5, *Force XXI Operations: A Concept for the Evolution of Full-Dimensional Operations for the Strategic Army of the Early Twenty-First Century*. Five characteristics defined Force XXI: doctrinal flexibility; strategic mobility; tailorability and modularity; joint, multinational, and interagency connectivity; and versatility in war and in operations other than war. Those characteristics corresponded well with the design for early twenty-first-century military capabilities that the Joint Chiefs of Staff announced with the 1995 publication of Joint Vision 2010.

As described by the TRADOC, Force XXI doctrine was developed for a force-projection army consistent with the base force concept rather than the forward-deployed formations of the Cold War. The new doctrine addressed the challenges of the emerging multipolar world and the lessons of recent combat experiences. It employed innovative technological capabilities, both enhancements to existing equipment and evolving new platforms, to replace the sequential operations of earlier Army doctrine with a system of simultaneous operations. The force would support a digital, knowledge-based mode of land warfare in the first two decades of the twenty-first century.

As Army planners spent the mid-1990s establishing the precise doctrine and programs needed to make Force XXI a reality, they also began planning for its successor. The potential of the revolution in military affairs could not be fully exploited in the short-term plans for Force XXI, nor could the existing Army sacrifice mission readiness to hasten more ambitious reforms and the technological innovations they required. Modernization would necessarily be a gradual and deliberate process. The legacy force, the existing Army of the early 1990s, would be supported and maintained as information systems and new techniques transformed its weapons platforms and policies into those of the interim force, Force XXI. At the same time, research and development efforts would begin preparing the Army to leap ahead to the objective force, AAN, around the year 2025.

The concepts for such a force began emerging in 1993, partly as a by-product of early discussions over Force XXI. General Dennis J. Reimer, the Army chief of staff, asked the TRADOC to start officially exploring possibilities for the Army of 2025 during FY 1994. By February 1996, those explorations had matured into a formal structure, TRADOC's Army After Next Project. Discussions continued through FY 1999, focusing on the geostrategic setting, state of the military art, human and organizational issues, and technological trends that might influence the army of 2025. The

emerging consensus depicted AAN as a network-driven force maximizing the potential of Force XXI's system-of-systems approach to warfare, adding physical speed and agility to the mental agility developed by Force XXI. Lightweight, survivable, sustainable, and lethal systems would combine their specialized functions in real time to dominate the battlespace through precision and information dominance.

That objective force, successor to the current legacy force and the rapidly emerging interim Force XXI, was shaped by a series of war games in the late 1990s. The Leavenworth Games, force-on-force exercises conducted by the TRADOC Analysis Center at Fort Leavenworth, Kansas, explored the demands of warfare in the world of 2025. A series of Winter War Games conducted at Carlisle Barracks, Pennsylvania, served as the capstone of those joint exercises. Both the war games and the discussions surrounding them drew on expertise from academia, industry, the armed services, and other government agencies to help the Army prepare for the future.

By the end of FY 1998, the Army had initiated a number of programs intended to make Force XXI and its successor, AAN, operational realities. Those efforts extended beyond the research, development, and procurement of new technologies. Recruiting, training, and retaining high-quality personnel were as essential to the ongoing modernization campaign as they had been to the restoration of the Army in the early 1980s. Efforts to provide an improved quality of life for military families, including housing and military construction, educational and recreational opportunities, and expanded use of reserve component personnel to reduce the frequency of individual deployments, helped the Army maintain its appeal in a highly competitive labor market. While making these efforts, the Army implemented the force and budget reductions established in the *Report on the Bottom-Up Review* and maintained a high operational tempo.

The global instability that began to emerge as the Warsaw Pact withered away and the Soviet Union collapsed from within, and the subsequent increase in U.S. contingency operations, continued through the 1990s as the Army pursued its reform agenda. Unrest in the Balkans led to U.S. intervention in Bosnia-Herzegovina and Kosovo, while humanitarian crises required American responses in Somalia and Haiti. Iraq's stubborn refusal to comply with the provisions of the Gulf War cease-fire agreement produced a standing U.S. commitment to enforce no-fly zones in the northern and southern regions of that nation, and the threat of renewed hostilities required an expanded military presence throughout the region. Smaller crises, the growth of international terrorism, drug interdiction, and other demands, combined with the Army's mission of shaping a stable and secure international order, strained the Army's ability to respond without penalizing readiness or training.

Balancing operational readiness and training requirements with the

demands of force modernization was one of several challenges awaiting the Army as it entered the final fiscal year of the decade. Approaching FY 1999, the Army displayed clear signs that it had not been entirely successful in striking that balance recently. Training shortfalls, maintenance backlogs, aging equipment and infrastructure, and continued shortages in important personnel categories had to be addressed within the constraints of a budget essentially unchanged from FY 1998.

In addition, the year marked the end of both the first post-Cold War decade and the guidance originally provided by the bottom-up review process that sought to prepare the Army for the twenty-first century. As the Army continued to pursue the plans for Force XXI and AAN it had developed in response to the review, it would need to establish a revised and extended equivalent to the review's guidance to meet the demands of the next decade. The Army's strength of ten active and eight reserve-component divisions at the end of FY 1998 already reflected an adaptation of the goal of ten active and five-plus reserve-component divisions originally established by the review for FY 1999.

The Army's commitments on the first day of FY 1999 were extensive even for an eighteen-division force. In Germany and Korea, Bosnia-Herzegovina and Kosovo, Kuwait and Turkey, and in less prominent locations around the globe, the Army continued to shape the international environment and protect U.S. interests. Manning those deployed and forward-stationed units, and meeting the personnel and logistics requirements of the Army as a whole would strain operational tempo guidelines and challenge the Army's personnel and logistical systems. Continued implementation of improved business practices and other initiatives launched during the 1990s as part of the overall revolution in military affairs offered the Army a means of increasing its effectiveness and efficiency in meeting those challenges during FY 1999.

As the final fiscal year of both a decade and a century, FY 1999 presented the Army with several unique challenges in preparation for the year 2000. On 31 December 1999, the United States was scheduled to withdraw from Panama and to turn over all of its remaining property in that nation. The Army, therefore, had to withdraw its forces from Panama and make final preparations for the transition during FY 1999. After almost a century of continuous American presence, this represented a difficult, and at times emotional, transition for all those concerned. Headquarters, U.S. Army South, faced the challenge of directing the process in Panama even as it relocated from that nation to Puerto Rico.

Army computer systems, like many others, faced an even more unusual challenge with the approach of the year 2000. That date represented a potential threat to the continued functioning and reliability of information systems still using only two digits to represent the year in date calculations.

Despite several years of effort, as of October 1998 only half of the Army's systems reported readiness for the inescapable arrival of 1 January 2000. During FY 1999, the Army had to prepare the remaining systems, confirm their networked functions, and validate contingency plans for potential problems in both military and civilian information systems.

Those preparations and contingency plans corresponded with two elements of the Army's mission as identified in the National Military Strategy: responding to the full spectrum of crises abroad and at home, and preparing for an uncertain future. In planning for the transition to 2000 and examining potential responses to local disturbances caused by related computer failures, the Army also increased its preparedness for acts of cyber warfare and domestic terrorism. The terrorist threat received considerable attention in the final days of FY 1998 and throughout FY 1999 as the Army continued to implement and coordinate new procedures for dealing with the potential use of weapons of mass destruction within the United States.

The National Domestic Preparedness Office pursued a similar goal as it entered its first full fiscal year of operation in FY 1999. Administered by the Army as the lead agency for that DOD-supported working group, the office underwent several months of turmoil before emerging as an interagency office supported by the Department of Justice. The Army added a useful weapon to the arsenal of federal, state, and local programs coordinated by the National Domestic Preparedness Office when it established the first Weapons of Mass Destruction Civil Support Teams. Those reserve-component units became operational during FY 1999, standing ready to coordinate the activities of local and federal agencies responding to a nuclear, biological, or chemical incident while providing expert assistance to first-responders.

Shaping the international environment is the third in the National Military Strategy triad of mission elements. As it entered FY 1999, the Army had more than twenty-eight thousand soldiers deployed away from their home stations in seventy foreign nations. During the year, the Army faced ongoing operational demands in Kosovo, Bosnia-Herzegovina, and the Persian Gulf. It continued to promote U.S. interests by training foreign militaries, supporting arms control missions, and providing humanitarian assistance where needed.

The need for that assistance was apparent from the first day of the new fiscal year, as the northern Caribbean reeled from the devastation caused by Hurricane Georges. The 15–29 September storm struck the U.S. mainland in Mississippi as well, leaving hundreds of thousands of people along the U.S. Gulf Coast without electricity. National Guard personnel already deployed to provide disaster relief and humanitarian assistance as FY 1999 began soon faced another natural disaster—Hurricane Mitch

caused additional billions of dollars in damage and claimed more than ten thousand lives in the Caribbean basin before passing over Florida on 5 November. Members of the National Guard, Army Reserve, and active Army spent much of the year in the subsequent relief and recovery efforts.

Whereas humanitarian missions contributed to the year's high operational tempo, they also provided welcome opportunities to combine training activities and operational deployments. The relief efforts for Hurricanes Georges and Mitch allowed active Army and reserve-component units to practice mobilization procedures and their more specialized skills against real needs. Some reserve-component personnel used scheduled training missions to address humanitarian concerns within the United States, providing dental and veterinary care to Native American communities in Montana and Alaska.

The Army also continued to provide training assistance to foreign nations. One venue for that assistance, the School of the Americas, was a source of public controversy during FY 1999 because of continued allegations that its curriculum somehow supported or encouraged human rights abuses. Army efforts to support foreign and domestic drug law enforcement agencies (DLEAs) proved to be more popular. In addition to training DLEA personnel, the active and reserve components provided operational support and equipment in the struggle against illegal drugs.

Some of that equipment became available as the Army procured more modern materiel. Research, development, testing, and evaluation efforts continued to improve the sophistication of Army hardware during the fiscal year. Programs to develop technologies such as M1A2 Abrams tank upgrades, the RAH-66 Comanche helicopter, and the Crusader artillery system consumed more than \$5 billion of the Army's \$64 billion FY99 appropriation. The first upgraded M1A2s entered Army service at the end of the year, and prototype trials of the Comanche and Crusader brought those weapons systems nearer to production.

Important as they are to maintaining the Army's technological superiority, such development programs also offered less obvious benefits. The Army continued to expand the number of research grants and contracts offered to historically black colleges and universities and to minority institutions during FY 1999, thus promoting equal access to educational and research opportunities. Procurement efforts reflected the same interest in assisting disadvantaged populations through the first use of Historically Underutilized Business Zone contracts to assist regions of high poverty or unemployment. Such research and procurement efforts introduced the Army's first "green ammunition" during FY 1999. The environmentally friendly 5.56-mm round was expected to reduce both the amount of lead

contamination produced by Army ranges and the use of toxic substances in the manufacturing process.

Advances in environmental health, equal access, and local economies all promote quality of life, an issue of general concern throughout the force in FY 1999. The quality of life offered to Army personnel is a key element in the success of recruiting and retention efforts. Those efforts were complicated during the year by the competitive labor market and the perceived gap between civilian and military pay, but the active Army and National Guard both met their end-strength goals, and the Army Reserve missed its target by less than one percent. Efforts to improve Army housing, correct a growing shortage of Roman Catholic chaplains, raise pay, provide educational opportunities, and identify and correct other quality-of-life issues sought to maintain and improve the appeal of Army life during FY 1999.

In accordance with the 1997 National Military Strategy, the Army's overall objective for FY 1999 was to defend and protect U.S. national interests by promoting peace and stability while remaining ready to defeat adversaries if such action became necessary. The Army pursued that objective in accordance with the guidance provided by the *Report on the Bottom-Up Review*, seeking to implement Force XXI reforms, maintain the readiness of the existing force, and prepare for the advent of the Army After Next. Along the way it faced budgetary constraints, continued personnel problems, and natural disasters, but it proved capable of meeting those and other challenges and of executing its full mission under the National Military Strategy.

2

Organization, Management, and Budget

Organizational Changes

In March 1993, Secretary of Defense Les Aspin initiated a comprehensive review of U.S. defense strategy, force structure, modernization, infrastructure, and foundations from the bottom up. A response to the sweeping changes in geopolitics and security threats brought on by the end of the Cold War and the collapse of the Soviet Union, the Bottom-Up Review was the first step in a complete restructuring of the U.S. military. By 1994 the Army had responded to the Report on the Bottom-Up Review with the genesis of its own plan for an organization capable of meeting the demands of national security in the early twenty-first century.

The resulting force structure, Force XXI, required substantial changes in the institutional Army, information technology, and operational units. The transformed units would be easier to deploy and capable of precision engagement and dominance across the full spectrum of missions. Emerging information technologies would be exploited to maximize the efficiency, flexibility, and lethality of the new configuration.

The Army quickly articulated its goals for harnessing information technology as the Army Enterprise Strategy, which mandated the creation of a seamless information environment throughout the range of command, control, communications, computers, and intelligence (C4I) activities. The Army Enterprise Strategy, as a component of Force XXI reforms, produced substantial changes in the institutional Army in the late 1990s. The U.S. Army Modernization Plan for 1995 and its successors provided the architecture for the Army's transition to the new structure.

By FY 1999, the major organizational realignments and implementation of new technologies called for in the Army Enterprise Strategy and the Force XXI campaign were well under way, if not accomplished. As a result, the Army Staff introduced few substantive changes in FY 1999. The year's organizational activities were marked by the continued pursuit of prior initiatives rather than the creation of new ones as the Army furthered its transformation to meet the requirements of the National Military Strategy and the transition to Force XXI.

Demonstrating the growing prominence of contingency operations and coalitions in the post-Cold War era, the Office of the Deputy Under Secretary of the Army (International Affairs) (ODUSA-IA) completed its second full year of operations in FY 1999. Established in FY 1997, the ODUSA-IA develops, coordinates, supports, and assesses Army international activities in support of the National Security Strategy, the National Military Strategy, and the regional strategies of the Combat Commands.

One of ODUSA-IA's two directorates, the International Policy Integration and Assessment Directorate, houses the International Policy, Plans, Programs, and Integration Division (IPP). The IPP participated in restructuring The Army Plan (TAP) mission areas and revising AR 11-32, *Army Long-Range Planning System*, during FY 1999. The revisions consolidated ten mission areas into seven and established co-chairs for each mission-area team. The ODUSA-IA became a co-chair of the mission areas "Promote Regional Stability" and "Reduce Potential Conflicts and Threats," integrating its objectives into Army strategic planning guidance. The IPP also translated the requirements for Army international activities into capabilities for inclusion in Army Planning Guidance, section two of TAP. These developments promoted the integration, through ODUSA-IA, of the Army's international programs and coalition-building efforts into strategic planning.

The potential threat of terrorist acts using weapons of mass destruction was addressed in FY 1999 through an organization that briefly fell under the Army's administrative aegis. Originally functioning as a Department of Defense (DOD) office supported by the Army, the newly created National Domestic Preparedness Office (NDPO) soon transferred to the Department of Justice. The organization, a working group focusing, synchronizing, and integrating federal support of domestic response to weapons of mass destruction, coordinated the activities of the DOD, the Federal Emergency Management Agency, the Environmental Protection Agency, the Department of Energy, the Department of Health and Human Services, and the Department of Justice. The decision to allow the Department of Justice to lead the NDPO through its designated agent, the Federal Bureau of Investigation, ended several months of rivalry as various constituents struggled to define the organization's structure and role.

Army personnel began implementing a new system for managing temporary-duty travel in FY 1999. The Defense Travel System (DTS) is a DOD-directed program in which the newly established DTS-Army worked in close cooperation with the DOD Project Management Office-DTS to create an automated, paperless travel system. Fort Campbell, Kentucky, was selected as the test site for the new system, which was extended to the reserve components before the end of the fiscal year. Digitizing the

management of temporary-duty travel reduced the former forty-eight—step procedure to only nine steps, shortening the time required for a person to complete travel arrangements from 9.0 to 1.3 hours. The full processing cycle was reduced from twenty-one days to slightly over two days, a clear improvement in efficiency and cost control.

Management and Information Systems

Information technology constitutes one of the Force XXI campaign's three axes. To facilitate the campaign, the Army Enterprise Strategy provides a comprehensive vision for all C4I activities. Information infrastructure, quality assurance, modernized battlefield communications and network management, and battlespace awareness were the Army chief information officer's priorities for FY 1999. The assistant secretary of defense for command, control, communications, and intelligence recognized the Army commitment to those priorities by designating it as the executive agent for developing theater joint tactical networks. That decision combined previous appointments as the executive for joint network management (1993) and tactical switching systems (1992), placing responsibility for all theater network infrastructure under the Army's director of information systems for command, control, communications, and computers (DISC4).

By sharing information networks at the theater level, the armed services can coordinate their activities and leverage their strengths to an unprecedented extent. The potential impact of such technology on joint operations lies at the core of Joint Vision 2010, the operational paradigm for the early twenty-first century. The DISC4 therefore bears responsibility both for ushering Force XXI through the ongoing Revolution in Military Affairs brought about by information systems and new technologies, and for extending the benefits of those technologies through joint applications.

The Joint Network Management System was approved by the Joint Requirements Board in October 1998. But the board also required an assessment of the system's key performance parameters, addressing interoperability, that was not completed before the end of FY 1999. Defense Planning Guidance calls for the Army to develop and field the system's threshold requirements by FY 2003; a separate inquiry concluded that development and deployment of the Joint Network Management System could not be accelerated to advance that date because of budget constraints.

Similarly, the Army's future tactical network management system—Integrated System Control (ISYSCON), a component of the Warfighter Information System (Terrestrial)—suffered from budgetary limitations. The system is intended to establish an automated, theater-wide network that signal units can use to manage multiple tactical communications systems

in support of battlefield operations. ISYSCON facilities will manage tactical communications and interface with each battlefield functional area in the Army Tactical Command and Control System architecture. The Army approved full-rate production of the ISYSCON on 5 February 1999. But the FY99 budget precluded fielding thirty systems as originally scheduled, thus hampering the ability of signal units to manage voice and data networks as planned. Although the program continued, it failed to meet its Army acquisition objective and did not have funding restored to programmed levels in the FY00 budget.

AUTODIN, the automatic digital network, which had long served as the principal means of DOD record message transmission, was officially closed at the end of FY 1999. Its last four switching centers were redesignated as digital messaging system transition hubs and are scheduled to remain operational to handle message traffic from remaining AUTODIN equipment. The DISC4 also maintained several other previously initiated programs intended to modernize a number of space, communications, and network systems.

During FY 1999, the Army continued to make progress toward the creation of the Army Information Warehouse (AIW), one of the primary initiatives for securing the Army's information superiority. Based on the Army's strategic vision and a revised record-keeping process, the AIW will collect, protect, and project information to support the Army's needs. The new record-keeping process itself was developed during FY 1998, reducing the standard 117-step procedure of the Army records management program to a 20-step procedure. As the focus of the Army's records management efforts during FY 1999, the AIW concept was further defined through the creation of a mission needs statement, approved as an Army requirement and forwarded for review by the Joint Requirements Oversight Council. That review is particularly important in light of the Army chief information officer's FY99 approval of the draft DOD Directive 5015.2. Under the new directive, responsibility for implementing records management policy and procedures for the combatant commands will be transferred from the services to the Joint Staff.

The Army also continued its efforts, begun in 1995, to prepare its information systems for the arrival of the year 2000. Many systems, ranging from payroll programs to weapons platforms to the global positioning satellites, employed software using only two digits to identify the year. If left uncorrected, those systems could experience a wide range of errors dealing with the double zeros that would represent the year 2000, which they might read as 1900. To deal with this Year 2000, or Y2K, problem, more than twenty-five thousand Army information systems and six hundred thousand microprocessor-controlled devices had to be prepared and tested, at a cost of some \$600 million, before calendar

year 1999 ended. The Internet became a tool in this process, as the Army Y2K homepage provided information for the entire Army community, and Web-enabled databases allowed real-time tracking of efforts to defeat the “Millennium Bug.”

Army Operations Order 99-1, Millennium Passage, was published in January 1999 to direct Y2K preparations. In response to that order, the Army Operations Center established a Y2K Transition Operations Cell to track the status of systems and installations during transition periods and to monitor worldwide Y2K events that could affect Army operations. An independent examination by the Army Audit Agency validated contingency tests, organized by the Joint Chiefs of Staff, that verified the Army’s ability to maintain its mobilization, deployment, sustainment, and intelligence capabilities in the face of major Y2K-related systems failures.

Economies and Efficiencies

In FY 1999, the Army continued to face expanding operational and force readiness challenges with limited funds. This reality of America’s post–Cold War defense posture had a significant impact on all areas of military activity and made cost reduction and fiscal efficiency issues increasingly important throughout the Army. One telling example of efforts in this regard was the secretary of the Army’s order that, after 1 December 1998, paper media would no longer be purchased for administrative publications and forms. The Department of the Army’s administrative documents were to be available in electronic form exclusively and to be printed from CD-ROM or the World Wide Web only when necessary.

Legislative action underscored the need for financial responsibility and accurate record keeping. The Chief Financial Officers (CFO) Act of 1990 required major government agencies to prepare auditable financial statements for the first time. The Government Management Reform Act of 1994 extended the CFO Act to include all major executive branch agencies, their components, and the government as a whole. If that was not mandate enough, the Federal Financial Management Improvement Act of 1996 (FFMIA) and the Information Technology Management Reform Act (Clinger-Cohen Act) of the same year required all federal agencies to develop integrated information systems to produce those auditable financial reports.

All of that legislation resulted in the publication of the Army Chief Financial Officers Strategic Plan (General Fund): Five Year Plan (FY 1999–2003). Through FY 1998, the Army had consistently failed to receive an unqualified opinion from external auditors examining its financial statements. As a result of this failure to produce verifiable statements, the Army received special attention in reports to Congress mandated by the

FFMIA—reports by the inspector general, the Office of Management and Budget, and the comptroller general. The Army Audit Agency (AAA), which provides internal advice, oversight, and evaluation of the Army's accounting procedures, itself disclaimed an opinion of the reliability of the Army's financial statements for FY 1998. To correct that state of affairs, the Chief Financial Officers Strategic Plan called for an unqualified opinion on Army financial statements by FY 2003. The five-year effort to meet that goal began in FY 1999.

The AAA began to pursue that end with an internal restructuring to improve its own efficiency. Grouping personnel into dedicated functional areas enabled auditors to specialize and to receive function-specific training. The new task-focused orientation allowed the function groups to build expertise and improved client relationships as it decreased their learning curves and response times. To further this internal transformation, the AAA initiated the Army Follow-Up Program. Under the new practice, functional experts returned to Army activities that the AAA had evaluated to assess the effects of measures undertaken in light of the previous audit. As a whole, this transformation of the AAA should serve as a catalyst for the efficient documentation of Army expenditures and the elimination of unnecessary costs.

Such gains can have immediate operational consequences. The chief of staff, U.S. Army, Europe, and Seventh Army, requested that the AAA create a team in Skopje, Macedonia, to support operations in Kosovo. After its arrival in August 1999, the team provided the deployment commander with real-time assistance in creating and employing management processes and controls to guarantee the effective and appropriate use of resources.

During a review of the Army Strategic Management Plan, the AAA established a new strategic model (Audit Report AA 99-746) to be used throughout the Department of the Army. That model directs senior commanders in the creation and implementation of performance management systems similar to those developed for Kosovo, which should assist those commanders in maximizing the efficiency of their accounting procedures.

Despite its success in overseeing Army expenditures, the AAA suffered from the same budgetary problems as other establishments. The competitive labor market of 1999 forced the agency to launch its own recruitment efforts to overcome shortages of skilled personnel. Relatively expensive General Services Administration rents forced the AAA to relocate its capital field office and Fort Belvoir field office to Army-owned facilities in the Washington, D.C., area. (A similar move was scheduled for the Atlanta field office in FY 2000.)

The accounts of the AAA itself did not go unchallenged. In a joint series of peer reviews, the AAA audited the Naval Audit Service and was itself

successfully audited by the Air Force Audit Agency. The DOD inspector general conducted two oversight reviews of the AAA, one on the processes used to determine audit requirements and request resources, and one on the Army's internal review organizations. These efforts at rationalizing Army financial records and checking figures proved their worth. In FY 1999, the AAA spent \$51.1 million to issue 522 audit reports of various types that identified potential savings projected at \$794 million.

Budget

Reducing the Army of the Cold War era into a more economical, more mobile, and more lethal institution was neither an easy task nor a rapid process. The original *Report on the Bottom-Up Review* produced guidance for budgets from FY 1995 through FY 1999. In June 1994, the Office of the Secretary of Defense released the Army Program Objective Memorandum FY 1996–2001, a document that clarified the Army's intent in the drawdown of forces to reflect new strategic and fiscal realities. President William J. Clinton's FY99 budget request for a total obligation authority (TOA) of \$64.3 billion supported a force consistent with both of those planning documents. Congress appropriated slightly less than requested, giving the Army a TOA of \$64 billion.

Table 1 compares the FY99 budget with that of FY 1993, the year in which the Bottom-Up Review originated. The comparison illustrates the impact of the Army's continued restructuring on funding requirements. Even ignoring the effects of inflation, over seven years the Army reduced its TOA by \$1.6 billion—almost \$3.1 billion if new expenditures for chemical weapons demilitarization, environmental restoration, and former DOD programs are disregarded. Constant dollar savings would be significantly greater.

The FY99 budget attempted to preserve mission readiness, enhance modernization, integrate the force structure, and maintain the quality of life for military and civilian personnel. The balance among those needs was an elusive one, for the Army faced an accelerating operational tempo that strained its resources. On a typical day in 1999, the Army had 140,000 personnel abroad in seventy foreign nations—that is, more than 60 percent of U.S. forces were committed to external engagements.

Maintaining readiness while balancing resources and demands was particularly difficult. Because of competing priorities and congressional reductions, the Army consistently proved unable to meet its self-imposed goals in combat vehicle training mileage between FYs 1997 and 1999. In FY 1999, M1A1 Abrams tank crews were scheduled to complete 800 miles of training; M2 Bradley infantry fighting vehicle crews, 934 miles; and M3 Bradley cavalry fighting vehicle crews, 970 miles. Abrams crews recorded

TABLE 1—APPROPRIATIONS COMPARISON: FY 1993 AND FY 1999
(Unadjusted Millions of Dollars)

<i>Category</i>	<i>FY 1993</i>	<i>FY 1999</i>
Military personnel, Army	23,236	20,836
Operations and maintenance, Army	17,847	16,630
Procurement		
Aircraft	1,441	1,384
Missiles	1,049	1,209
Weapons and tracked combat vehicles	921	1,538
Ammunition	1,094	1,063
Other procurement	3,067	3,306
Research, development, test, and evaluation	6,015	5,022
Military construction, Army	437	869
Chemical demilitarization ^a	0	777
Environmental restoration	0	367
Army family housing		
Operations	1,364	1,095
Construction	160	135
Army National Guard		
Personnel	3,240	3,490
Operations and maintenance	2,297	2,670
Military construction	215	142
Army Reserve		
Reserve personnel	2,170	2,167
Operations and maintenance	2,297	1,199
Military construction	42	102
Total ^b	65,628	64,005

a. New category, FY 1999.

b. Discrepancies result from rounding.

an average of only 681 miles of training for the year; M2 crews, 710 miles; and M3 crews, 573 miles—less than sixty percent of the objective for each type of vehicle.

In a similar vein, the Army National Guard Depot Maintenance Program experienced continuing shortfalls. The program is intended to repair equipment and return it to its owning unit. Although the Guard had no maintenance float that would allow it to replace equipment awaiting overhaul, the program was funded at only 35 percent of its FY99

requirement. Funding for depot maintenance for the enhanced separate brigades held steady at 60 percent of required levels, and divisions received only 8 percent of the necessary funds. As a result, backlogs of Army National Guard equipment awaiting repair grew in FY 1999 while readiness suffered.

To avoid underfunding such important activities in an era of intense budget scrutiny, the Army endorsed Defense Secretary William S. Cohen's continuing efforts to reduce infrastructure and overhead costs. Savings from such decreased spending could then be reinvested to promote force readiness and modernization. The service's efforts bore fruit in the FY99 budget, which included \$1.3 billion in savings from ongoing management initiatives designed to promote efficiency. Those funds are not apparent through a quick glance at budget totals, however, because they were reinvested in high-priority tasks. Any budgetary comparison needs to consider an additional \$1.5 billion that was transferred to the Army in FY 1999 from the budgets of DOD programs, including chemical demilitarization, commissaries, and defense reform initiatives.

When the transferred programs are included and adjustments are made for inflation, Congress's \$64 billion appropriation for FY 1999 represented a decrease of less than 1 percent from the preceding year. The president's proposed budget for FY 2000 included \$3 billion in additional Army TOA. Such figures may indicate the possible stabilization of, and perhaps even a rebound in, spending authority as the force drawdown neared its 2003 conclusion and operational tempo remained high.

The approved \$2.6 billion in pay for military personnel in the active and reserve components remained essentially static from FY 1998, despite a 3.1 percent pay raise, largely the result of continuing decreases in the Army's uniformed strength. The active component, numbering 488,000 personnel in FY 1998, declined to just below its targeted 480,000 for FY 1999. Army National Guard and Army Reserve personnel figures also decreased to targets of 357,000 and 208,000, respectively, as the reserve components continued their programmed reductions.

Quality of life is a constant concern within the Army. Family housing accounted for \$1.2 billion in Army expenditures, including major projects at Fort Carson, Colorado; Fort Hood, Texas; Fort Lewis, Washington; and Fort Meade, Maryland. Of the \$1.1 billion appropriated for military construction, \$362 million supported barracks renovations and operations, including new barracks for 11,700 soldiers. Barracks construction at Camps Casey and Hovey in Korea received \$49 million of the FY99 Korea supplemental appropriation.

Morale, welfare, and recreation (MWR) programs did not fare so well. The Army was able to execute only 87 percent of MWR's programmed mission-sustaining activities and 86 percent of its planned community

support activities. Base commanders were forced to draw on the \$206 million budgeted for these activities within the base support account to meet more pressing needs, thus hampering the scheduled MWR efforts.

Equipment modernization and procurement accounted for \$8.5 billion of spending during the fiscal year. The Army also established modernization goals for the next decade, an indicator of FY 1999's transitional role as the force approached a new century and a major milestone in its continued restructuring into Force XXI architecture and eventually the Army After Next. The 1993 Bottom-Up Review had addressed force structure only through 1999. The updated 1999 Army Modernization Plan, with goals similar to the 1995 and 1996 versions, extended the Bottom-Up Review's priorities and established a series of goals to measure progress toward Army Vision 2010. The five major modernization goals, which will continue to drive Army procurement through 2010, are (1) digitizing the Army, (2) maintaining combat overmatch, (3) sustaining research and development while focusing on leap-ahead technology, (4) recapitalizing the force, and (5) integrating the active and reserve components.

Procurement activities in 1999 reflected these goals. The Army spent \$1.5 billion on weapons and tracked vehicles in 1999. Abrams tank and Bradley fighting vehicle upgrades directly supporting force digitization accounted for \$788 million of that total. Acquisition of command-and-control vehicles to coordinate the improved flow of communications resulting from such modernization efforts required an additional \$44 million. The upgrades and new vehicles, which incorporated enhanced thermal imaging, navigational, communications, and identification friend or foe systems to avert confusion and friendly-fire incidents, clearly expanded the Army's ability to overmatch potential enemy forces.

Upgrading Apache attack helicopters to the Longbow configuration, with improved target acquisition and fire-control systems, was the major focus of Army expenditures on aircraft for FY 1999. The \$612 million devoted to that program accounted for almost half of the \$1.38 billion aviation allocation. Kiowa Warrior helicopter upgrades, modifications and additions to the fleet of Black Hawk helicopters in various configurations, and modernization of the CH-47 cargo helicopter rounded out the aviation program.

Smart, and increasingly brilliant, weaponry figured prominently in missile spending. Longbow Hellfire, the fire-and-forget antitank missile for use with the Apache Longbow helicopter, was but one component in the program. The Brilliant Antiarmor (BAT) submunition for the Army Tactical Missile System (ATACMS) entered initial production, and the ATACMS missile entered Block II production in the BAT configuration so that it could carry the new warhead. Modifications to Patriot, Stinger, Avenger, TOW (tube-launched, optically tracked, wire-guided), and MLRS

TABLE 2—BUDGET APPROPRIATIONS AND REQUESTS: FY 1999 AND
FY 2000, RESPECTIVELY (*Millions of Dollars*)

<i>Category</i>	<i>FY 1999</i>	<i>FY 2000</i>
Military personnel, Army	20,836	22,006
Operations and maintenance, Army	16,630	18,660
Total	37,466	40,666
Procurement		
Aircraft	1,384	1,230
Missiles	1,209	1,358
Weapons and tracked combat vehicles	1,538	1,417
Ammunition	1,063	1,141
Other procurement	3,306	3,424
Research, development, test, and evaluation	5,022	4,426
Military construction, Army	869	656
Chemical demilitarization ^a	777	1,169
Environmental restoration	367	378
Army family housing		
Operations	1,095	1,098
Construction	135	14
Total	16,398	15,933
Reserve components		
Army National Guard		
Personnel	3,490	3,571
Operations and maintenance	2,670	2,903
Military construction	142	16
Army Reserve		
Personnel	2,167	2,271
Operations and maintenance	1,199	1,369
Military construction	102	23
Total	9,770	10,153
Total ^b	64,005	67,132

a. New category, FY 1999.

b. Discrepancies result from rounding.

(multiple launch rocket system), and the acquisition of TOW2 and Javelin missiles, contributed to the \$1.2 billion expenditure for missiles.

Procurement of conventional ammunition and other needs required \$4.369 billion. At the same time, the Army continued its research, development, test, and evaluation (RDTE) efforts to provide the force with new tools and capabilities. There were no new major initiatives in the \$5.022 billion RDTE appropriation. But that appropriation did support the development of a number of technologies vital to the ongoing digitization effort and the implementation of the Force XXI concept.

These technologies included improved night vision systems, control digital networks, and improvements to the Abrams and Bradley weapons platforms. The budget also supported continued development of the Comanche helicopter. Other efforts included research and development of BAT submunitions, the Block IIA ATACMS, and the Crusader artillery system, and further developments to the TOW missile. As a whole, the RDTE effort continued to integrate new technology into weapons and weapons systems while exploring alternative concepts in future capabilities-based warfighting.

The president's proposed FY00 budget maintained the same goals and strategic assumptions as did the FY99 budget. Table 2 compares the two budgets, showing the general increases the president suggested. The increased funding requirements of the FY00 budget underline the significance of FY 1999 as a transitional year, one marking the end of a decade of decreases in the Army budget. The tight budget of FY 1999 left little room for unforeseen contingency operations without adverse impact on readiness and other Army concerns. Subsequent increases in funding requests for personnel, operations, and maintenance for FY 2000 are indicative of the challenges awaiting the Army as it entered the next decade.

3

Personnel

In FY 1999, the active Army declined from 483,880 personnel to 479,426. The loss of nearly thirty-five hundred personnel through normal attrition placed the force in line with its authorized strength of 480,000 officers and enlisted members. The 68,935 commissioned and enlisted women of the active Army constituted 14.7 percent of the force. That percentage was expected to continue to rise, with 90 percent of all Army occupations and 70 percent of all positions open to women as of FY 1999. More than 20 percent of new personnel in FY 1999 were female, surpassing the minimum goal of 18 percent. African-Americans composed 26.5 percent of the force; Hispanics, 7.6 percent; and Caucasians, 59.2 percent. Other groups made up the remaining 6.7 percent of the active Army's personnel. For comparison, in 1999 the U.S. population of 17–19-year-olds was 14.2 percent African-American, 14.9 percent Hispanic, 66 percent Caucasian, and 4.9 percent of other heritage.

Membership in the Army National Guard (ARNG) decreased by 4,975 members, to a total of 357,469. This left the ARNG at 100.1 percent of its authorized strength of 357,223 personnel. The 37,607 women serving in the ARNG accounted for 11.75 percent of the total force. African-Americans composed 15.6 percent of the ARNG, and the 1,574 Hispanic officers and 23,212 Hispanic enlisted members accounted for 6.9 percent of ARNG personnel. The 257,579 Caucasians in the ARNG made up 73.8 percent of the force; Asians and Pacific Islanders, 1.8 percent; and Native Americans, 0.8 percent; with 1.1 percent of ARNG personnel identifying themselves as of other or unknown ethnic origin.

In contrast to the reductions of the active Army and the ARNG, the Army Reserve (USAR) expanded by 1,868 members, despite substantial recruiting shortfalls. Its FY99 end strength of 206,836 still remained below the authorized level of 208,003 officers and enlisted men and women. The 50,710 female USAR personnel composed 24.52 percent of the total force. African-Americans, Hispanics, Asians and Pacific Islanders, and those identifying their ethnicity as other or unknown were also more prominent in the Reserve than in the Guard, at 25.4, 8.0, 3.3, and 2.7 percent, respectively. Caucasians made up 60.1 percent of USAR personnel, and

TABLE 3—END-STRENGTH COMPARISON: FY 1998 AND FY 1999

<i>Component</i>	<i>FY98</i>			<i>FY99</i>		
	<i>Authorized</i>	<i>Actual</i>	<i>Percentage</i>	<i>Authorized</i>	<i>Actual</i>	<i>Percentage</i>
Active Army	487,575	483,880	99.2	480,000	479,426	99.9
USAR	208,000	204,968	98.5	208,003	206,836	99.4
ARNG	361,516	362,444	100.3	357,223	357,469	100.1

Note: ARNG = Army National Guard, USAR = U.S. Army Reserve.

0.5 percent were Native Americans. Total end strength figures, authorized and actual, for the active Army, the ARNG, and the USAR in FYs 1998 and 1999 are shown in Table 3.

Both of the reserve components faced a continuing and serious shortage of full-time support personnel during the fiscal year. These personnel constitute the critical portion of reserve units responsible for routine administration, logistics, recruiting, retention, and operations. Shortages in support positions adversely affect the preparedness of reserve-component units. Such personnel fall into four categories: active-duty Guard and Reserve members performing administrative and support functions, dual-status military technicians who are participating reservists as a condition of their employment, active Army personnel attached to reserve formations, and civil service employees. Table 4 lists full-time personnel required, authorized, and actually assigned to the Army Reserve and Army National Guard.

The ratio of full-time personnel authorizations to validated requirements reached an all-time low in FY 1999. The USAR was authorized at only 62.1 percent of its requirement; the ARNG at 72.5 percent. In contrast, the ratio of authorizations to requirements was 99 percent for the Naval Reserve, 97 percent for the Marine Corps Reserve, 92 percent for the Air National Guard, 94 percent for the Air Force Reserve, and 100 percent for the Coast Guard Reserve. At the end of the fiscal year, the Department of Defense (DOD) was reviewing full-time support programs and procedures to address this disparity.

Another discrepancy might have become a serious complication for the accession of first-term recruits in FY 1999. Despite clear goals defined by the Quadrennial Defense Review and force reduction plans, the Training and Doctrine Command (TRADOC) did not receive sufficient funds to execute its training mission. By February 1999, the TRADOC reported that it lacked the resources necessary to meet the Army's needs, predicting shortfalls in training spaces for new enlisted personnel of 6,900

TABLE 4—FULL-TIME SUPPORT PERSONNEL IN THE RESERVE COMPONENTS

<i>Component Personnel</i>	<i>Army Reserve</i>	<i>Army National Guard</i>
Active-duty Reserve and National Guard personnel		
Required	21,517	40,827
Authorized	12,807	21,986
Assigned	12,983	21,912
Military technicians		
Required	10,347	23,815
Authorized	6,474	24,761
Assigned	6,355	23,578
Active component		
Required	603	320
Authorized	619	188
Assigned	184	463
Civil service		
Required	1,579	527
Authorized	1,251	527
Assigned	1,169	461
Totals		
Required	34,046	65,489
Authorized	21,151	47,462
Shortfall	12,895	18,027

in the active Army and 9,300 in the reserve components, as well as a deficit of 500 training spaces for newly commissioned officers by the end of the fiscal year. Actual year-end accession figures were almost 16,500 below the target, rendering the problem moot. If recruiting had been fully successful in 1999, the Army might not have been able to train that many new personnel.

Enlisted Personnel

The strong economy and low rate of civilian unemployment proved to be a serious obstacle to first-term enlistments in FY 1999. In an attempt to meet recruiting goals in that challenging environment, the Army

supplemented its standard enlistment bonus program for those men and women entering a critical military occupational specialty (MOS). All such bonuses were limited to a maximum of \$6,000 for a two-year enlistment or \$12,000 for four or more years. The added incentives were a seasonal bonus to equalize the flow of recruits to training facilities, the “HIGRAD” bonus of \$4,000 for applicants with thirty or more semester hours of college, and the \$3,000 Airborne bonus for those selecting an airborne MOS and agreeing to become airborne qualified. To widen the pool of potential personnel, the Army also initiated a five-year experiment in which graduates of home-schooling programs would be considered high school graduates for enlistment purposes. But first-term enlisted accessions still failed to meet established targets. Those targets are compared with actual accessions in Table 5.

TABLE 5—ARMY ENLISTED ACCESSION RESULTS: FY 1999

<i>Component</i>	<i>Goal</i>	<i>Actual</i>	<i>Difference</i>	<i>Percentage</i>
Active Army	74,500	68,209	−6,291	−8.4
ARNG	56,958	57,090	+132	+0.2
USAR	52,084	41,784	−10,300	−19.8

Note: ARNG = Army National Guard, USAR = U.S. Army Reserve.

The active Army contained 398,155 enlisted personnel at the end of FY 1999. In response to the shortage of new enlistees, the Army adjusted its FY99 retention goal from the original 62,300 to 65,000. To meet that goal, the rule requiring reenlistment to be initiated ninety days prior to separation from service was waived. This encouraged retention officers to further sharpen the focus of their reenlistment efforts on personnel in the final year of their enlistments. The appeal of the 3.1 percent increase in base pay authorized in the FY99 budget also aided retention efforts, which exceeded the increased goal with 71,147 reenlistments. Active-component retention rates for enlisted personnel are presented in Table 6.

TABLE 6—ENLISTED ACTIVE ARMY RETENTION: FY 1999

<i>Personnel</i>	<i>Goal</i>	<i>Obtained</i>	<i>Percentage</i>
Initial-term	20,200	20,843	103.2
Mid-career	23,000	24,174	105.1
Career	21,800	26,130	119.9
Total	65,000	71,147	109.5

The introduction of an indefinite-reenlistment program improved personnel retention. This new option sought to stabilize the noncommissioned officer corps and to encourage career service commitments. Beginning in FY 1999, personnel with ten years of uniformed service and grades of E-6 or higher are given the option of reenlisting for an indefinite term instead of the standard two- to six-year commitment. Personnel selecting that option are formalizing their commitment to an Army career and continue to serve until retirement or, as with officers, until they resign or exceed time-in-grade limits without promotion.

The Army Reserve continued to fall slightly short of its authorized strength in FY 1999, despite exceeding its goal for non-prior-service recruits by 132 through a major recruiting campaign. A decline in prior-service recruitment and decreasing interest in reserve service were the greatest obstacles in reaching authorized force levels. To correct the problem, 186 additional Reserve recruiters began to join the existing force of 1,318 as the fiscal year ended. At their disposal as incentives were a newly approved \$8,000 bonus for non-prior-service recruits and expanded benefits under the Montgomery GI Bill.

Enlisted personnel accounted for only 161,930 of the Reserve's 206,836-person strength. At 78 percent, this was the lowest enlisted composition of the three force components. Enlisted personnel composed 83.6 percent of the active Army, and the Guard's enlisted force was 89 percent of the total. The Reserve was also relatively lacking in warrant officers, who made up only 1.4 percent of all personnel, as opposed to the active Army's 2.4 percent and the Guard's 2.2 percent.

This comparative shortage in enlisted personnel and warrant officers is partly explained by the Reserve's structure. The Army Reserve includes both the Individual Ready Reserve and Individual Mobilization Augmentees (IMAs), categories unique to the Reserve that distort any direct comparison of force composition. Officers accounted for 6,388 of the 8,019 IMAs in FY 1999, a substantial surplus over the authorized 4,748 officers and the major reason for the apparent imbalance. If IMA personnel are ignored, Reserve enlisted personnel accounted for 81.45 percent of the force, bringing the USAR's composition much closer to that of the other Army components.

The Army National Guard enlisted 26,085 non-prior-service personnel in FY 1999, only 91.5 percent of the objective. Prior-service accessions made up the shortfall, with the Guard achieving 108.9 percent of its target at 31,005. The combination amounted to 57,090 new ARNG enlisted members, or 100.2 percent of the programmed objective of 56,958.

In FY 1999, the ARNG formed an enlisted personnel management review panel to examine current practices and procedures and to propose improvements in the ARNG's personnel management. Among topics

considered by the panel were the promotion system, assignment cycles, and access to training. The panel recommended some minor changes in the promotion system that are scheduled for implementation in FY 2000.

The ARNG’s examination of enlisted personnel policies corresponded with the activities of the Force Integration Division of the Office of the Deputy Chief of Staff for Operations and Plans. In addition to reviewing enlisted promotion standards, the division examined MOS designations and structures as part of a service-wide multiyear effort to validate standards of grade and to clarify the grade and career progression paths within each MOS. The various new standards were scheduled for publication in FYs 2000–03.

Officer Personnel

There were 77,152 officers in the active Army at the end of FY 1999, including 11,633 warrant officers. More than 13 percent of the total, 10,522 commissioned and warrant officers, were female. Of the commissioned officers, 11.3 percent were African-American, 3.8 percent were Hispanic, and 78.5 percent were Caucasian. People of mixed heritage and other groups made up 6.4 percent of the officer corps. The composition of the warrant officer ranks was similar: 15.7 percent African-American, 5.0 percent Hispanic, 74.1 percent Caucasian, and the remaining 5.2 percent in other categories. Table 7 shows the total number of active Army officers by grade.

TABLE 7—ACTIVE ARMY OFFICERS BY GRADE: FY 1999

<i>Grade</i>	<i>Number</i>	<i>Grade</i>	<i>Number</i>	<i>Grade</i>	<i>Number</i>
General	10	Colonel	3,457	CW5	347
Lieutenant general	46	Lieutenant colonel	8,747	CW4	1,484
Major general	94	Major	14,201	CW3	2,893
Brigadier general	148	Captain	21,306	CW2	4,985
		First lieutenant	9,351	WO1	1,924
		Second lieutenant	8,159		
Total	298		65,221		11,633

Note: CW = chief warrant officer, WO = warrant officer.

New officers enter the service through several paths. The Reserve Officer Training Corps program at the nation's colleges and universities continues to be the primary source of new officers, while graduates of the U.S. Military Academy provide the professionally educated heart of the junior officer corps. Officer Candidate School provides another route to commissioning, and the Judge Advocate General Corps, Army Medical Department, and Chaplain Corps each maintain their own professional programs. New officer accessions for FY 1999 are totaled by source in Table 8.

TABLE 8—COMMISSIONED OFFICER ACCESSIONS BY SOURCE: FY 1999

<i>Source</i>	<i>Active Army</i>	<i>AMEDD</i>	<i>JAGC</i>	<i>CC</i>	<i>Total</i>
USMA	937	21	1	0	959
ROTC	2,389	397	39	0	2,825
OCS	483	0	0	0	483
Other	19	799	105	79	1,002
Total	3,828	1,217	145	79	5,269

Note: AMEDD = Army Medical Department, CC = Chaplain Corps, JAGC = Judge Advocate General Corps, OCS = Officer Candidate School, ROTC = Reserve Officer Training Corps, USMA = U.S. Military Academy.

Army officers normally become eligible for grade advancement when a standardized schedule places them in the zone of consideration after a predetermined length of service. They may also be considered above or below that standard zone of promotion when circumstances warrant. Table 9 lists the average length of service at promotion and the standard length of service for promotion, by rank, for FY 1999. The schedule was established by the Defense Officer Personnel Management Act (DOPMA) of 1980.

TABLE 9—OFFICER YEARS OF SERVICE AT PROMOTION BY RANK: FY 1999

<i>Rank</i>	<i>Average Length of Service (Years)</i>	<i>Standard Length of Service (Years)</i>
Colonel	22.4	22.0 +/-1.0
Lieutenant colonel	16.5	16.0 +/-1.0
Major	10.8	10.0 +/-1.0
Captain	4.0	3.5 +/-1.0

Officers are considered as fully members of the career force upon promotion to the rank of captain, and they may continue to serve until their time in grade without promotion exceeds established limits. The Army continued to meet the DOPMA standards in the promotion of officers, as shown in Table 10, an achievement that escaped its grasp in the early 1990s as force reduction efforts and the legislated promotional windows conflicted. That awkward transition ended when force levels stabilized. In fact, the percentage of considered officers selected for promotion in 1999 was higher than the same figure for the Cold War Army of 1989, and promotions came somewhat faster, as shown in Table 11.

Assessing officer performance for development and promotion is a challenge. In FY 1999, the Army furthered its efforts to establish more sophisticated and useful analytical tools for those processes. The chief of staff directed the Center for Army Leadership (CAL) to test a leadership assessment program in operational units, based on earlier trials at Fort Leavenworth, Kansas, with students in the Combined Arms and Services Staff School and the Command General Staff Officer Course of the Army Command and General Staff College. The program provides leaders with performance feedback from superiors, peers, and subordinates. As a result of the combination of evaluations from all perspectives, the CAL labeled the program a “360-degree” assessment. The two test programs, conducted in the 212th Field Artillery Brigade, Third Corps Artillery, at Fort Sill, Oklahoma, and the First Brigade Combat Team, Fourth Infantry Division (Mechanized), at Fort Hood, Texas, proved successful enough that the CAL suggested an expansion of the development program in FY 2000.

Managing personnel assignments to meet the needs of the Army and the interests and career aspirations of individual officers is a challenge undertaken by the Officer Personnel Management Directorate (OPMD), Army Personnel Command. On 1 September 1999, OPMD reestablished the central Colonels Division, which had been disbanded in 1997, to manage the assignments of colonels. In the two-year interim, basic branch assignment officers or functional area managers had made colonel assignments, and many branch chiefs had managed colonel assignments personally. The restored division eliminated that burden on branch chiefs, permitting them to concentrate their personnel development efforts elsewhere. In its new form, the Colonels Division enabled assignment officers to focus their efforts within their own basic branch, managing the assignments and professional development of the individual colonels in that branch.

Civilian Personnel

The Army’s civilian workforce declined by seventy-seven hundred members in FY 1999, from 232,600 to 224,900 employees. Overall, the

TABLE 10—OFFICER PROMOTIONS ABOVE, IN, AND BELOW ZONE BY RANK: FY 1999

<i>Rank</i>	<i>Considered in Zone</i>	<i>Select Above</i>	<i>Select In</i>	<i>Select Below</i>	<i>Select Total</i>	<i>Promotion Rate (%)</i>	<i>DOPMA Goal (%)</i>
Colonel	777	18	386	26	430	55.3	50
Lieutenant colonel	1,386	33	954	73	1,060	76.5	70
Major	1,732	78	1353	79	1,510	87.2	80
Captain	4,122	19	4053	n/a	4,072	98.7	95

TABLE 11—PROMOTION RATE AND TENURE COMPARISON: SELECTED YEARS

<i>FY</i>	<i>Major</i>		<i>Lieutenant Colonel</i>		<i>Colonel</i>	
	<i>% Selected</i>	<i>Years/Months</i>	<i>% Selected</i>	<i>Years/Months</i>	<i>% Selected</i>	<i>Years/Months</i>
1989	82.0	11/8	73.9	17/9	49.4	22/10
1994	85.4	11/10	70.5	16/9	50.4	22/9
1999	87.2	10/10	76.5	16/6	55.3	22/5

civilian workforce was down 44 percent from its FY89 strength of 402,900, reflecting the general force reduction as the Army transforms itself from its Cold War orientation to the Force XXI structure. In the process, the workforce has aged. The average Department of the Army civilian employee was 46.6 years old in FY 1999, up from 43.0 ten years earlier. Average length of service also increased, from 13.5 to 17.2 years. These figures imply a troubling, disproportionate decline in the numbers of entry-level personnel. As the leadership of the Army's civilian workforce ages toward retirement, it may experience difficulty in locating a sufficiently broad talent pool of experienced potential successors.

In response to that concern, the training, education, and professional development of the civilian workforce have been a priority in recent years. The DOD instituted the Defense Leadership and Management Program (DLAMP) in 1997 to prepare administrators for senior positions. The DLAMP consists of defense-focused graduate education, rotational assignments, and professional military education to prepare civilians for key leadership positions. Fourteen new graduate courses joined the DLAMP's existing thirteen courses in 1999. This expansion of the young but already successful program was assisted by Secretary of Defense William S. Cohen's appointment of the first chancellor for education and professional development on October 2, 1998. The chancellor serves as the advocate for all DOD higher education and professional development programs for civilian personnel.

Management of the Army's civilian personnel is being centralized as part of the Army Enterprise Strategy's ongoing effort to maximize efficiency. A total of ten regional Civilian Personnel Operations Centers (CPOCs) replaced individual post and command facilities in FY 1999, coordinating personnel selection and administration. The South Central CPOC became the first to reach full operational capability, doing so in the closing days of FY 1998, on 27 September. It serves nine major commands, including the U.S. Army Materiel Command and the U.S. Army Corps of Engineers, its largest clients.

On 1 October, the North Central CPOC also attained full capability, serving the facilities of three major commands in eight different states, plus some activities in Colorado and Texas that lay beyond its otherwise designated geographic borders. The North Central CPOC was subsequently designated as the Army's single-source recruiter for career interns. It also developed and fielded the Resumix online applicant response system, an automated tool that enables applicants to view the status of their résumés. The system was quickly adopted as the Army standard, with interest from other DOD agencies. By the end of the fiscal year, all ten CPOCs were fully operational, serving almost 100 percent of the Army's civilian labor force.

Families

Family support contributes substantially to the total quality of life for servicemembers, in turn improving morale, individual mission readiness, retention rates, and first-term enlistments. Simple demographics indicate the importance of family issues to today's Army. The 479,426 active Army personnel in FY 1999 had a total of 714,486 immediate family members: 250,908 spouses, 459,052 children, and 4,526 adult dependents. Army parents—52.8 percent of commissioned officers, 75.7 percent of warrant officers, and 47.9 percent of enlisted personnel—have an average of two children each; 4.0 percent of all officers and 8.4 percent of enlisted personnel are sole parents. Some of these parents face difficulties with very basic matters, including household finances. Army commissaries redeemed \$6.8 million in food stamps and \$8.7 million in vouchers for the federally supported Women, Infants, and Children nutritional program in FY 1999.

Female servicemembers of all ranks are less likely to be married than their male peers, as Table 12 shows, but Table 13 demonstrates that those who are married are far more likely to have a spouse who is also in military service. The unique challenges of a dual military marriage, faced by roughly 6 percent of Army personnel, confront almost 20 percent of all women and less than 4 percent of all men in the service. Thus the Army's ability to support uniformed couples may well have particular significance for the quality of life of female personnel.

TABLE 12—MARRIAGE BY GENDER AND GRADE: FY 1999
(Percentage)

<i>Grade</i>	<i>Male</i>	<i>Female</i>	<i>Total Grade</i>
Officer	72	54	70
Warrant officer	87	60	85
Enlisted personnel	53	44	51
Total personnel	56	45	55

Secretary of Defense William J. Perry recognized the impact of family issues on overall quality of life in 1995 when he created the Quality of Life Executive Committee. That committee includes family issues in four of its six guiding principles: providing servicemembers and families safe, modern communities and housing; making educational opportunities for servicemembers and their families a cornerstone of quality-of-life programs; ensuring parity in quality-of-life programs across installations and services as servicemembers and their families move between them; and building solid communications with servicemembers and their families.

TABLE 13—DUAL MILITARY MARRIAGES BY GENDER AND GRADE: FY 1999
(Percentage)

<i>Grade</i>	<i>Male</i>	<i>Female</i>	<i>Total Grade</i>
Officer	5.1	44.2	9.5
Warrant officer	4.3	48.5	6.3
Enlisted personnel	6.9	42.2	11.5

Such issues are addressed within the Army through a number of programs. The Army Family Action Plan (AFAP) identifies issues of concern through Army family symposiums at all command levels and through AFAP conferences and meetings of the AFAP General Officer Steering Committee, held in alternating years. The 1999 AFAP conference identified for discussion 127 separate issues, in nine major categories. With the assistance of subject matter experts, conference members voiced their concerns and identified possible solutions, producing a list of priorities for the attention of Army leaders. The list contained 27 new issues, which were added to the 37 matters previously identified for action by the steering committee. Delegates also voted for the five most valuable services offered to Army families. The most valued services for 1999, in descending order, were medical and dental care, Army housing, the commissary, the AFAP itself, and retirement services.

Some of the issues that the AFAP addresses are quite specific. For example, the Directorate of Human Resources of the Office of the Deputy Chief of Staff for Personnel administers the Adolescent Substance Abuse Counseling Service (ASACS). In 1999, that service provided intensive substance abuse prevention support to at-risk teens, efforts proven by experience to be more successful than the general educational mission that the ASACS held at its 1980 inception. The service has proven to be popular as well as effective, and in some posts may be the only adolescent counseling program available. The AFAP continues to voice strong support for the ASACS program.

More general issues of family support are addressed at the unit level. Family support groups emerged when Guard and Reserve units struggled to meet the needs and concerns of the family members of personnel mobilized for the Gulf War. These family support groups are largely staffed by volunteers supported by local commanders and Army policy. They act as an information conduit and point of contact between family members and the military chain of command, seeking to integrate family members fully into the Army team.

The Army Family Liaison Office supports the activities of the family support groups and, in 1999, added a paid position specifically set aside for an Army spouse. The selected spouse serves under contract to provide technical research and support to the Army Family Liaison Office, based on familiarity with installation quality-of-life programs, facilities, and issues, particularly from the perspective of an Army family member. The holder of the position also assists in defining and implementing plans, policies, procedures, evaluation criteria, and reporting requirements to improve operational efficiency and effectiveness within the Family Liaison Office.

Special Topics

The 364th Infantry Regiment, an African-American unit stationed at Camp Van Dorn, Mississippi, during the fall of 1943 was the focal point of allegations that the Army massacred more than one thousand of its soldiers and covered up the crime. In *The Slaughter: An American Atrocity*, author Carroll Case used local legends and rumors as the inspiration for a novel making these claims. Primarily a work of fiction about the alleged massacre, *The Slaughter* contained a short nonfiction section describing Case's investigation of the rumors. That section caused the Library of Congress to categorize the entire work as nonfiction, which contributed to the controversy the book raised when it was published in the summer of 1998. In 1999, Mississippi Congressman Bennie G. Thompson and the National Association for the Advancement of Colored People requested that the Department of Defense and the Department of the Army determine if there was any truth to the story.

In response to questions raised about *The Slaughter*, the assistant secretary of the Army for manpower and reserve affairs assigned the Army Center of Military History (CMH) the task of fully documenting the history of the 364th during World War II, seeking any indication of unusual or inexplicable loss of personnel. Subsequent exploration of records at the National Archives and Records Administration, including the National Personnel Records Center, found no evidence of the alleged massacre and subsequent cover-up. The CMH traced all officers and men assigned to the unit during the war to their separation from service and randomly surveyed veterans of the unit from the fall of 1943. The veterans discounted the possibility of such an event, and the research revealed no unexplained disappearances, large-scale transfers, or other events that could have hidden mass murders.

Instead, the history of the 364th that emerged documented the challenges facing an African-American unit serving in the southern United States under trying circumstances. Racism, poor leadership, and adverse conditions combined to create several incidents involving the regiment.

Those incidents became the subjects of rumor and exaggeration, and a local legend bearing little resemblance to the actual events began to develop. The events themselves are clear. By late 1942, the unit was under investigation for allegations of poor leadership and conduct. A drunken brawl between a soldier of the 364th and an African-American military policeman of the 733d Military Police Battalion on Thanksgiving Day 1942 resulted in an accidental shooting in downtown Phoenix, Arizona. When exaggerated accounts of the incident reached their camp, members of the 364th seized weapons and headed for town. Before order could be restored, men from the unit and local police had exchanged fire. Two soldiers and one civilian died in the confrontation, which left fourteen other people injured.

Fifteen men from the regiment were court-martialed over the riot before the unit departed for predeployment training at Camp Van Dorn. Rumor and a grim reputation preceded the unit into Mississippi. On the afternoon of 30 May 1943, Pvt. William Walker of the newly arrived 364th struggled with a white military policeman in the small town of Centerville. Three local police officers intervened, and Sheriff R. Whitaker shot and killed Walker. As had happened previously, men from the regiment remaining in camp responded to the incident in town, this time by assembling at a post exchange and seizing weapons from the Company C arms room. When military police arrived, they were rushed by men from the unit and fired several shots to halt the crowd. One struck a bystander in the leg. Col. John Goodman, the regimental commander, arrived shortly thereafter and reestablished control. The incident triggered a number of investigations by the War Department and eventually resulted in the unit, scheduled for the European Theater, being deployed to Alaska. It served well as a garrison force in the Aleutian Islands.

In 1944, Camp Van Dorn was the scene of another event in the area formerly occupied by the men of the 364th Infantry Regiment. Two African-American soldiers struggled in the post exchange, and a soldier from the 1697th Engineer Combat Battalion was stabbed. Soldiers from his unit seized their weapons and fired on the barracks of the 394th Quartermaster Company, thought to be the knife-wielder's unit. The entire camp heard the fusillade, which left the two men wounded and the barracks clearly damaged by rifle fire.

These three incidents and the rumors that surrounded them appear to be the slender factual foundation for Case's fictional massacre. The investigation prompted by Case's allegations of murder and conspiracy discovered no evidence of atrocity or cover-up, no personnel unaccounted for, and no suspicions or allegations among veterans of the unit in question.

A more substantive personnel issue emerged in July 1998 with the secretary of defense's call for a revision of policies on personal relationships

between military members of different rank. The Army's resulting revision to AR 600-20, *Command Policy*, became effective on 2 March 1999. The Army's former prohibition of personal or business relationships that compromise the chain of command, are exploitative or unfair, lead to partiality, or otherwise affect good order and discipline, remained in effect. In addition, relationships between officers, including warrant officers, and enlisted personnel were prohibited. Existing marriages and relationships between members of the National Guard and Reserve arising primarily out of their civilian occupations were excluded from the regulation's provisions, which included a brief period to resolve newly prohibited relationships.

Abuse of controlled substances remained a major concern of Army personnel policy in FY 1999. The Army continued its substance abuse programs in an effort to protect the health, reliability, and morale of military and civilian personnel. As the greatest deterrence to the abuse of controlled substances, testing provided the cornerstone of the Army's efforts. Active- and reserve-component personnel and civilians in positions with critical safety or security requirements are randomly tested. Specimens from military personnel are examined in two forensic drug-testing laboratories for cocaine, THC, and amphetamines. Alternating tests for PCP, opiates, LSD, and barbiturates are included in the process, which may also include examination for anabolic steroids when requested by a commanding officer. Civilians are examined for THC and cocaine and, on a rotating basis, for PCP, amphetamines, and opiates. The overall positive rate for drug testing was 1.12 percent in FY 1999. Table 14 gives test results by group.

TABLE 14—DRUG-TESTING RESULTS BY COMPONENT: FY 1999

<i>Component</i>	<i>Number of Specimens Tested</i>	<i>Positive Rate (%)</i>
Active Army	1,076,361	0.83
ARNG	136,469	2.68
USAR	70,798	2.32
Civilian	8,593	1.70

Note: ARNG = Army National Guard, USAR = U.S. Army Reserve.

The Army Center for Substance Abuse Programs (ACSAP) provides policy, training, and assistance in all aspects of the Army Alcohol and Drug Abuse Prevention and Control Program. During FY 1999, the international accounting and consulting firm PricewaterhouseCoopers completed an external evaluation of the program under an ACSAP contract. The review concluded that the Army's substance abuse programs had deteriorated since the firm's 1994 evaluation. That decline was primarily attributed to the loss of staff and resources. In addition, a lack of standardization, defense

of local programs, and current promulgated policy hampered efforts and contributed to the discouragement and demoralization of program staff. The review recommended formation of a task force to reorganize the program, suggesting it consider the possibilities of contracting the activity out, adopting private industry's employee assistance program model for Army use, or combining the two solutions.

Force Development, Training, and Operational Forces

Blueprint for the Future

In 1993, Secretary of Defense Les Aspin called for a review of U.S. defense strategy “from the bottom up.” *The Report of the Bottom-Up Review* (BUR), as approved by Secretary Aspin, contained strategic and budgetary guidance for FYs 1995 through 1999. That guidance initiated a wave of Department of Defense (DOD) and service policy and doctrinal changes that continue to influence the Army. In FY 1994, Army planners responded to the BUR by deciding that the Cold War Army of Excellence should adapt itself to the emerging information age. That adaptation process also reflected the realities of America’s changing strategic goals and economic realities, and provided the Army’s blueprint for the future. As the last year specifically described in the BUR, FY 1999 marks a milestone in the Army’s ongoing struggle to transform itself into an information-age fighting force.

The effort began in FY 1994 with the launch of the Force XXI campaign, a plan to redesign operational forces, reinvent the institutional Army, and develop and acquire advanced information technologies. The Force XXI Army would be smaller, more flexible, more durable, and more lethal than the Cold War force, well suited to joint and multinational operations across the full spectrum of conflict. By FY 1999, the major initiatives of the campaign had been launched, its strategies largely determined. Army leadership could focus on executing Force XXI programs rather than on developing new concepts.

Force XXI was scheduled to become reality by 2010. Planned reform efforts would continue long past that date, however, as the Army continued to seek a revolutionary leap beyond its 1990s capabilities and their evolutionary successors of the Force XXI Army. By 2025, current plans will have materialized into the objective force, Army After Next (AAN). The exact composition and technology of AAN, and the link between it and Force XXI, remained vague concepts even as the Army continued implementing Force XXI programs during FY 1999.

But AAN is defined by several characteristics that are inherent in its role as the successor to Force XXI, the intermediate step between the current Army and the Army of 2025. As it develops, AAN will embrace and enhance the defining capabilities of the Army of 2010. Fully digitized and composed of updated versions of current forces and newly developed interim forces, Force XXI will enjoy real-time situational awareness throughout the theater of operations and beyond. Joint and combined forces will share information through networked systems and receive an accurate, real-time picture of the battlespace. Those same information networks will provide logistics personnel with an accurate picture of the Army's stores and requirements, speeding the flow of essential materials from factory to front. Six balanced imperatives—leadership development, modern equipment, sound doctrine, proper force mix, superior training, and quality people—will combine in Force XXI to produce an army able to rapidly project the right mix of forces to any part of the world to achieve decisive results as part of joint and multinational operations.

From the intermediate step of Force XXI, the Army plans a revolutionary leap into AAN, combining new weapons systems and doctrines with the network-centric, information-age capabilities of the Army of 2010. AAN will leverage information technology in all mission areas, deploy and operate with unparalleled speed, and dominate the full spectrum of conflict. Within ninety-six hours of a decision to deploy, early-entry forces and a new, flexibly structured strike force will be combat ready in a trouble zone anywhere in the world. Only twenty-four hours later, that initial force will have been reinforced by a second strike force and a mechanized brigade that is lighter and more lethal than its 1999 counterpart. If necessary, a full three-division corps will be on the scene in only thirty days, sustained by improved sea and airlift capabilities and stocks of pre-positioned equipment.

This goal, announced in Joint Vision 2010, motivated the Army's efforts through FY 1999. Army leaders spent much of the fiscal year articulating a new vision statement to encapsulate the Army's core values and its intent in pursuing Force XXI and AAN reforms. The vision statement was being prepared for release in early FY 2000 and would confirm the Army's dedication to its traditional mission and values while further clarifying its future plans.

Force Development

A successful military force maintains a degree of conservatism even as it plans for the future. The importance of the Army's mission demands that the transition from known and proven techniques to untried methods be a cautious one; that the shift from the present structure through Force

XXI to AAN not leave the nation militarily, diplomatically, or financially vulnerable. For that reason the Army will maintain and modernize elements of its existing force as it assembles the first units of the interim force that will lead the Army toward AAN.

This effort involves three distinct, but related, patterns of force development. To ensure near-term readiness, selected units of the existing force are being recapitalized, or provided with an infusion of new equipment and funds, and furnished with digital technologies. Although superficially similar to the Army of the early 1990s, this updated force will be more lethal, flexible, and survivable than its predecessor, thus marking an evolutionary step into information-age warfare. Preparations to make that step were the major theme in force development for FY 1999.

Establishing the foundations of the interim force and its constituent units was the second developmental theme for FY 1999. The first Interim Brigade Combat Team (IBCT) is planned to become operational as the foundation of the interim force shortly after the beginning of the twenty-first century. It will bridge the gap between the evolutionary update of the existing force and the revolutionary objective force. Light, mobile, and fully digitized, the interim brigades will feature combined arms at the company level and will be capable of beginning operations immediately on arrival in theater. Mission-capable across the full spectrum of operations, an IBCT will fight with unprecedented speed and efficiency, in a manner hinting at the capabilities of AAN. Interim and updated units, combined with a streamlined institutional army employing modern business practices and corresponding doctrinal changes is intended to constitute Force XXI.

Research into the technologies, doctrines, and strategies of the objective force formed the Army's third developmental focus in 1999. Ultimately, the interim force will adopt new technologies and smoothly develop into AAN. Envisioned as a thoroughly networked, mission-oriented system of systems rather than the platform-focused, task-specific combat force of 1999, AAN will represent a revolutionary transformation in land-based combat. Reduced to its simplest expression, AAN will conduct operations as a single, theater-level entity reaching back to its support base in the installations and factories of the continental United States. Such a structure will differ from the 1999 construct of discrete but interdependent units separated in space, time, and information from their support systems and each other.

As these plans to field information-age forces imply, the Army devoted considerable attention to information technology in FY 1999. A series of advanced warfighting experiments allowed the Army to validate the tools and concepts for a digitized division, scheduled to be fully equipped by the end of FY 2000, and for the eventual digitization of the entire force. Acquisition programs reflected the goal of Army digitization. System

enhancement programs (SEP) for the M1A1D and M1A2 Abrams tanks began to provide crews with digital command-and-control capabilities. Thus equipped, tank crews eventually will be able to share information with Bradley fighting vehicles that began undergoing a similar upgrade in 1997. Research and development continued on the Crusader, a fully digitized and automated self-propelled artillery piece capable of operating with the older systems in the network environment.

An engagement fought by older Abrams tanks and Bradley fighting vehicles provides a context for understanding the increased capabilities information technology is bringing to the existing force. On the evening of 26 February 1991, the 2d Squadron, 2d Armored Cavalry Regiment, and 1st Infantry Division engaged elements of the Iraqi 18th Mechanized and 37th Armored Brigades in the Battle of 73 Easting. The 3d Brigade, 1st Infantry, unknowingly overran and bypassed Iraqi forces during the battle, and for several hours American troops had to contend with small enemy units executing surprise attacks on passing vehicles. At one point, Abrams and Bradley commanders reoriented their turrets to engage enemy armor to their rear, causing advancing friendly crews behind their targets to return the apparently hostile fire. Five American tanks and four Bradley vehicles were destroyed in the incident, killing six U.S. soldiers and wounding thirty more.

In the same situation, the newly digitized Abrams tanks and Bradley fighting vehicles would have had access to real-time information from other vehicles, multiplying their effectiveness, lethality, and survivability. The presence and exact location of hostile units within the formation would have been known throughout the force as each was identified, and the location of all friendly vehicles would have been available to vehicle commanders. If the resulting situational awareness did not avert confusion, improved identification friend or foe systems would have offered better protection from friendly fire. Linked to this information, Crusader crews supporting the advance could have rapidly identified and engaged pockets of resistance where appropriate—a daunting task for the artillery present at 73 Easting. The addition of information-age technologies to the same tanks and infantry fighting vehicles that fought that battle would transform the capabilities of the existing force.

The Army formally accepted the first M1A2 SEP Abrams on 1 September 1999. In the same ceremony it also accepted the first Wolverine assault bridge launcher. Built on the M1A2 SEP chassis, the Wolverine provides the Army with a mobile bridging system capable of keeping pace with the Abrams on the battlefield. The new mobile bridge is another effort to improve the mobility of Army forces, offering commanders the ability to bridge obstacles up to seventy-two feet across without exposing unprotected troops to hostile fire or slowing operations to await the older bridge launcher.

The Army also continued to recapitalize its aviation assets and other vital systems. During FY 1999, previously approved programs updating the Apache, Kiowa Warrior, Black Hawk, and CH-47 helicopter fleets enhanced the Army's capabilities across the full mission spectrum. Additional modernization efforts included acquiring improved smart weapons and other technologies to expand the capabilities of the existing force and prepare for the first digitized division and the first IBCT.

Training

The new technology and bold plans for future developments are pointless, however, without soldiers capable of maintaining and using sophisticated equipment and concepts. Toward that end the Army maintained its training and educational efforts in FY 1999. At the beginning of the fiscal year, basic training and one-station unit training were expanded by one week. Much of the time gained was devoted to values training, which stressed the core concepts of loyalty, duty, respect, selfless service, honor, integrity, and personal courage. A total of 105,034 soldiers completed basic training in FY 1999, and the Army trained 65,286 personnel in specific military occupational specialties. An initiative titled Future Army Schools XXI established a Total Army School System to integrate advanced education throughout the active and reserve components. The Army is well aware that basic skills, technical competence, and continuing education are indispensable attributes of military personnel.

The centerpiece of Army training has long been the combat training center (CTC) program. As components of that program, the Combined Arms Center (CAC) at Fort Leavenworth (Kansas), the Combat Maneuver Training Center (CMTC) at Hohenfels (Germany), the Joint Readiness Training Center (JRTC) at Fort Polk (Louisiana), and the National Training Center (NTC) at Fort Irwin (California) have subjected Army units and personnel to highly realistic combat exercises. By doing so, the CTC program aspires to five goals: (1) increase unit readiness for deployment and warfighting; (2) produce bold, innovative leaders through stressful tactical and operational exercises; (3) embed doctrine throughout the Army; (4) provide feedback to Army and joint or combined participants; and (5) provide a means of improving doctrine, training, leader development, organization, and materials to enable soldiers to win in combat.

The rationale behind the CTC program is a simple one. Green troops and leaders make mistakes, particularly in their first engagement. Through realistic exercises that are more challenging than most actual combat, the Army seeks to leap ahead of the learning curve by fielding well-seasoned

units from the outset. Realistic, demanding training serves as bloodless battle, and through such training actual battle loses some of its ability to shock, paralyze, or overwhelm the U.S. soldier.

The influence of the CTC program is felt throughout the service, in both the active Army and reserve components. In FY 1999, the Army National Guard (ARNG) sent 11 percent of its force—40,000 out of 357,469 personnel—through various CTC programs. Fort Irwin hosted 14,300 ARNG members from more than twenty-five states for NTC exercises. At the CMTC, 1,900 Guardsmen participated in battalion-level exercises. Fort Polk hosted 7,750 ARNG personnel for live-fire and force-on-force brigade exercises at the JRTC. Fully 15,000 Guard personnel attended one of the four training programs at Fort Leavenworth's CAC. Participation rates for the active component's 479,426 personnel are even higher, with each active Army battalion expected to rotate through the NTC or JRTC during each commander's tour.

The apex role of CTC maneuvers in unit training is made clear in the training strategy for the ARNG's enhanced separate brigades. A four-year program is considered the base for all Guard units. Most of those units do not systematically participate in CTC maneuvers, but the enhanced separate brigades have a higher priority for both equipment and training. In these brigades, two aligned four-year programs provide an eight-year training cycle. The first year focuses on crew, squad, and platoon proficiency. In the following year, the training emphasis moves up to the platoon and company levels, and then to the company and battalion task force in the third year. The fourth year of the sequence develops company-through brigade-level operations. For enhanced separate brigades, years five through seven of the sequence replicate years one through three, culminating during year eight in a live-fire rotation at either the NTC or JRTC that marks the pinnacle of their training cycle.

The NTC hosts ten training rotations each year—nine for active Army brigades and one for a National Guard enhanced separate brigade. But the realism of NTC exercises has suffered from improved capabilities and changing doctrine. When the NTC was established in 1981, Army brigades engaged hostile forces at ranges of one to twelve miles. Current weapons systems can fire on enemy targets sixty miles away. The pace of tactical operations has more than doubled in the intervening years, from ten to more than twenty-five miles per hour. The exercise area at Fort Irwin is no longer large enough to permit entirely realistic brigade-sized exercises. As a result, during 1999 the Army maintained its efforts to procure 174,461 additional acres bordering the facility. Environmental concerns over the safety of the desert tortoise and the Lane Mountain milkvetch, two endangered species found on Fort Irwin, continued to disrupt the planned expansion of the NTC during FY 1999.

The NTC still hosted its scheduled annual rotation of ten brigades. Five three-battalion, heavy-light task forces; three three-battalion light-heavy task forces; and one two-battalion task force from the active Army engaged the opposing force of the 11th Armored Cavalry Regiment at Fort Irwin. One National Guard enhanced separate brigade also completed a training rotation in the California desert. One Guard enhanced separate brigade and seven three-battalion, task force-size brigades from the active Army rotated through the Fort Polk JRTC facilities. A ninth scheduled rotation there enabled the 75th Ranger Regiment to practice large-scale operations.

The other CTC locations made their own contributions to the Army's combat readiness during FY 1999. In Hohenfels, the CMTC conducted two mission-readiness exercises in support of continuing operations in Kosovo. The site also hosted five three-battalion brigades and one two-battalion, light-heavy task forces for their CTC rotations. At Fort Leavenworth, the Combined Arms Center's Battle Command Training Program (BCTP) continued to prepare field grade and senior officers for the challenges of warfare. The BCTP directed two corps-level exercises, seven divisional exercises, and eight joint task force exercises. In addition, the National Guard rotated twelve brigade staffs through battle command and battle staff training exercises at the CAC during FY 1999.

CAC rotations, however, are only one aspect of the Army's continuous effort to train its personnel. The Combined Arms Training Strategy establishes the requirements for unit, soldier, and leader training in both the active and reserve components. Battle-focused training management software assists commanders from company through brigade levels in creating unit mission statements and identifying crucial tasks for unit-level training. To meet those needs, Tiger XXI, the simulation in training for advanced readiness computer program, enables heavy units to combine live and virtual training at the battalion staff, company, and platoon levels. The Tiger XXI software became the ARNG's primary unit training program in FY 1999.

The Army continues to organize and participate in exercises around the world to complement unit training and CTC rotations. These exercises differ widely in their scale and format. Local exercises, such as the eleven-day Lightning Thrust Bronco that placed the 3d Brigade Combat Team in a simulated peace enforcement operation, test unit skills and give soldiers the opportunity to develop their abilities in a complex and realistic environment. At the other extreme, international combined arms exercises like Tandem Thrust 99 test and develop the Army's ability to operate with the other American armed services and allied forces. For Tandem Thrust, the 1st Battalion, 17th Infantry, and the 45th Corps Support Group deployed to Guam and the Mariana Islands. There the two units joined other elements of the U.S. Pacific Command and allied contingents from Australia and Canada for a command post and field exercise. Tandem Thrust involved

twelve thousand personnel, eighteen ships, and 110 aircraft from the three nations in the largest joint-combined military exercise ever held in the Western Pacific region.

Exercises do not have to involve entire field units or even address the threat of combat to contribute to the Army's mission performance. In FY 1999, six defense coordinating officers and their staffs—four from First Army and two from Fifth Army—joined National Guard personnel and representatives from the Federal Emergency Management Agency (FEMA) and other federal and local government offices to practice disaster preparedness in STAFFEX 99. Defense coordinating officers work with FEMA and other agencies to meet domestic crises. For STAFFEX 99, an earthquake north of Memphis, Tennessee, a disaster four times the magnitude of 1992's Hurricane Andrew, provided the simulated crisis confronting the nearly two hundred participants.

Operational deployments themselves have the welcome benefit of providing or encouraging additional training. And some operations, like FY 1999's NEW HORIZONS, combine both training exercise and operational mission in a single package. In the case of NEW HORIZONS, a scheduled annual training exercise expanded into a humanitarian relief mission in the wake of hurricanes Mitch and Georges. Stricken populations received badly needed assistance, and participating U.S. personnel were able to develop and use their skills in an operational setting.

Deployed Operational Forces

In FY 1999, the Army engaged in operational deployments across the mission spectrum. At home and abroad, Army personnel undertook humanitarian support, disaster relief, law enforcement, peacekeeping, and peace enforcement missions in support of the National Military Strategy. On an average day in FY 1999, the Army had approximately 109,000 forward-stationed personnel and 31,000 soldiers operationally deployed in more than sixty countries. These numbers fluctuated in response to global events. On 26 August 1999, for example, fulfillment of the Army's missions required the operational deployment of 27,397 soldiers—22,748 active Army, 2,701 ARNG, and 1,948 U.S. Army Reserve (USAR)—in eighty-one countries.

To meet the challenges of such widespread, large-scale commitments, the Army continued to draw on the reserve components to provide essential support and services to forces deployed in contingency and peacekeeping operations around the world. With ten active and eight reserve-component divisions, the Army was able to meet its mission requirements, but doing so placed heavy demands on some units. This is an understandable consequence of the number of annual deployments having more than

tripled since the end of the Cold War when the Army fielded eighteen active and ten reserve-component divisions.

The Army carefully tracks the amount of time each unit spends on out-of-station operational deployments. The deployment tempo (DEPTEMPO) is a count of every day the unit is deployed away from home, simply defined as each day the soldiers do not sleep in their own bunks. The DEPTEMPO is subdivided into four categories: local training, off-installation training, joint exercises, and contingency operation participation. The chief of staff, Army (CSA), established an annual DEPTEMPO goal of 120 days per unit when the Army began monitoring the DEPTEMPO in 1997. Unit DEPTEMPOs exceeding 180 days must be approved by the CSA. In FY 1999, the Army tracked the DEPTEMPO for 1,462 reporting units. A total of 126 units (8.6 percent of the total reporting), exceeded the 120-day goal. The DEPTEMPO for fifty-four units (3.7 percent of those reporting) passed the 180-day mark. Those fifty-four units included eighteen in Bosnia, two in the Sinai, and one in Saudi Arabia.

The training and operational commitments of the reduced Army increase the personal demands placed on military and civilian personnel. Some units bear more of a burden than others because of their special skills. A list of the specialties most often deployed in FY 1999 appears in Table 15.

The Army tries to minimize the impact of a high DEPTEMPO on units and soldiers. Individual units are rotated through contingency operations rather than remaining deployed until the operation concludes.

TABLE 15—SPECIALTIES MOST OFTEN DEPLOYED: FY 1999

Field artillery Firefinder radar operator
Field artillery meteorological crewmember
Cavalry scout
Fighting vehicle infantryman
Psychological operations specialist
Bridge crewmember
AH-64 armament/electrical systems repairer
Counterintelligence agent
M1 tank armor crewman
Combat engineer
Interrogator

Units deployed for a given mission are selected from throughout the Army to prevent forces in any one region from becoming overburdened. Army civilians and contractors are used, where appropriate, to relieve the strain on uniformed personnel. Reserve-component units routinely augment deployed active Army forces and reduce overall DEPTEMPOs, particularly in critical support functions. During FY 1999, the National Guard and Army Reserve deployed 8,628 uniformed personnel, in 344 units, to the Bosnia-Herzegovina area of operations. There they performed a variety of missions, including those within the following functional areas: civil affairs, psychological operations, public affairs, firefighting, military history, rear-area operations, fire support, light infantry, aviation, logistics, military police, medical service, and maintenance. In Kosovo, an additional 211 soldiers, from 27 reserve units, executed civil affairs, rear-area operations, medical public affairs, and maintenance missions.

To aid the individual soldier in dealing with operational demands, the Army has a policy to stabilize soldiers' domestic lives on their return from deployment. If they have been deployed for at least thirty consecutive days, soldiers are granted a period of uninterrupted home duty when the deployment concludes. Army policy provides for one month of duty at the soldier's permanent station for each month of temporary duty or temporary change of station. To the maximum extent possible, soldiers within that stabilization window will not be redeployed.

Army personnel are deployed for a wide variety of purposes, including disaster relief. The ARNG remains the nation's primary contingency force for wide-scale domestic disturbance or natural disaster, a role it was called to fulfill several times in FY 1999. In fact, the fiscal year had not even begun when the first natural disaster struck, a disaster that would occupy the Guard for most of the year. During the period 15–29 September 1998, Hurricane Georges struck seventeen Caribbean islands and affected the lives of more than thirty million people. The tropical storm swept over island after island in the northern Caribbean, killing at least four hundred people and causing damage amounting to billions of dollars. In some instances, as with the small island of St. Kitts, Georges destroyed the crucial winter tourist season and the sugar crop, thus devastating the local economy. Many residents were left homeless by the storm: more than one hundred thousand in the Dominican Republic, at least eighteen thousand in Haiti, more than seventeen thousand in Puerto Rico, and three thousand (10 percent of the population) on St. Kitts.

Georges also struck directly at the U.S. mainland. Making landfall on 28 September between Biloxi and Pascagoula, Mississippi, the hurricane drove nine thousand people into emergency shelters and left 230,000 people without power. Waves up to twenty-five feet high and winds of eighty-five miles per hour struck the Alabama coast, forcing the mandatory

evacuation of two Alabama counties. Emergency shelters cared for 4,675 people driven from their homes, while 177,000 people were left without electricity. Louisiana recorded two storm-related deaths and power outages affecting 260,000 people. New Orleans's Superdome stadium provided emergency shelter for fourteen thousand people. Florida experienced the worst disruptions. State authorities issued evacuation orders affecting 1.4 million people throughout the state. Two people were killed by the storm. The Florida Keys and at least 150,000 people in the Miami and Fort Lauderdale regions were left without electricity. Six hundred Florida National Guard personnel deployed to impose a nighttime curfew in stricken areas of the state.

National Guard units in all the affected states responded to the crisis immediately in their state capacity, and the Army launched federal relief operations as the new fiscal year began. Within the continental United States and in the Caribbean basin, food, water, ice, medical supplies, and personnel from all branches of the armed forces began to flow to the devastated islands and coastal communities. The effort was not a month old, however, when disaster struck again. Hurricane Georges had proven unusually persistent throughout its life cycle as a tropical storm. Hurricane Mitch proved to be unusually powerful. Sustained winds in excess of 180 miles per hour earned Mitch a rating as a category five hurricane, the fourth most powerful hurricane ever recorded. At its peak for some thirty-three hours on 26/27 October, Mitch passed through the western Caribbean before stalling off the coast of Honduras. By 2 November, at least ten thousand people had died in floods and mudslides across Central America. More than two million residents were left homeless in the wake of the storm. Mitch crossed the Caribbean, and the track of Georges, to strike southern Florida early on 5 November before passing into the Atlantic and losing strength. Damage from the second great storm of the 1998 hurricane season exceeded eight billion dollars.

The U.S. Army again rose to the challenge. Under the direction of the commander in chief of U.S. Southern Command, Operation NEW HORIZONS, a scheduled training exercise, quickly expanded into what President Clinton called "the largest humanitarian assistance mission since the Berlin Airlift." Beginning in January 1999, one new joint task force would be launched every thirty to sixty days. At the operation's peak, four ARNG battalion-plus-size task forces and a forward command element, totaling more than two thousand Guard members, were involved in the region. When the operation concluded on 4 August 1999, a total of 20,800 reserve-component personnel had participated in NEW HORIZONS, accompanied by personnel from the active Army and the other services. National Guardsmen built three medical clinics, four schools, and four wells in Honduras. ARNG engineer units also repaired an important bridge

and fifteen miles of damaged highway. The U.S. Army Corps of Engineers sent two hundred personnel, accompanied by 224 U.S. Marines, to help replace the ninety-three additional bridges destroyed in Honduras alone.

FY 1999 brought other humanitarian challenges to the Army. Tension in Yugoslavia between Serbs and ethnic Albanians in the province of Kosovo resulted in a growing refugee problem in the Balkans by March 1999. To assist the Republic of Macedonia in dealing with the influx of displaced people, the United States agreed to accept twenty thousand refugees from Kosovo in the spring of that year. The U.S. Army Reserve Command (USARC) at Fort McPherson, Georgia, assumed command of Operation PROVIDE REFUGE and in early April selected Fort Dix, New Jersey, to host the Kosovar refugees. The USARC chose the Fort Dix Army Reserve installation partly because of the facility's historical success as a power-projection center, able to expand and adapt rapidly to new demands. Responding to the challenge, the Fort Dix garrison received prompt reinforcements from other Reserve formations and active Army soldiers from the XVIII Airborne Corps at Fort Bragg, North Carolina. With the influx of new personnel, Fort Dix quickly converted from garrison routine to full mobilization. For example, the company-size dining facility expanded to four battalion- and three company-size facilities. On the morning of 6 May, the first 447 refugees landed at McGuire Air Force Base, New Jersey, and proceeded to their temporary quarters at Fort Dix. Between 6 May and 9 July, the installation processed 4,025 refugees, more than a quarter of the 13,989 Kosovars admitted to the United States during this time.

Unfortunately, the Yugoslavian conflict could not be resolved solely through humanitarian assistance to refugees. Acting through the North Atlantic Treaty Organization (NATO), the United States and its allies launched Operation ALLIED FORCE to disrupt the forces that Yugoslavia's president Slobodan Milosevic was using against the Albanian civilian majority in Kosovo. NATO air strikes began on 24 March and continued until 10 June 1999. On that day, United Nations Security Council Resolution 1244 formally authorized a peacekeeping force, confirming the agreement reached by NATO and the Federal Republic of Yugoslavia on 9 June. Beginning on 11 June, the United States maintained approximately seven thousand personnel in the Kosovo Force that was executing the NATO peacekeeping mission, Operation JOINT GUARDIAN. President Clinton soon mobilized Army Reserve personnel to support JOINT GUARDIAN under a presidential selected reserve call-up.

As the two hundred reservists mobilized by the president's order arrived in Germany to fill positions vacated by active Army personnel deployed to Kosovo, they encountered other Reserve personnel supporting another Balkans mission. Operation JOINT FORGE, begun in FY 1998, is the continuing NATO-led Stabilization Force peacekeeping mission in

Bosnia-Herzegovina. In Germany, Bosnia, and Hungary, twenty-three hundred Army reservists supported the sixty-nine hundred U.S. personnel of JOINT FORCE during FY 1999.

Army personnel continued to provide support for Operations NORTHERN WATCH and SOUTHERN WATCH, enforcing the no-fly zones in northern and southern Iraq. U.S. and British aircraft attacked that nation during December 1999 in Operation DESERT FOX, an effort to compel Iraq to comply with the arms inspection requirements agreed to at the end of the Gulf War. The Army provided support for the raids as part of a combined joint operation under the U.S. Central Command.

The Army sustained its support of domestic security by participating in counterdrug activities as mandated in the National Defense Authorization Act for FY 1989. More than three thousand soldiers from both the active and reserve components assisted federal, state, and local drug law enforcement agencies (DLEAs) during FY 1999. Other Army assistance activities included operational support, facilities, maintenance, intelligence analysis, linguistic support, engineer support, equipment, training, and planning assistance. To facilitate such cooperation, 338 soldiers and Department of the Army civilians were assigned to various counterdrug joint task forces. The majority of the training support requested by the DLEAs during FY 1999 was provided by the Training and Doctrine Command (TRADOC), the National Guard Regional Counterdrug Training Academy, the Multijurisdictional Counterdrug Task Force Training Academy, and the National Interagency Counterdrug Institute. The DLEAs also commonly requested training from the U.S. Army Military Police School and instruction on intelligence preparation of the battlefield.

The Army Reserve deployed 565 personnel to complete 115 counterdrug support missions in FY 1999. USAR activities ranged from constructing roads and fences along the Mexican border to providing intelligence analysts and linguists to foreign and domestic DLEAs. The Army National Guard assigned twenty-five hundred to thirty-five hundred personnel each week to support operations that included aerial and ground reconnaissance, road and fence construction, other engineering projects, marijuana eradication, cargo inspection at ports of entry, transportation, translation, intelligence analysis, and drug demand reduction support activities. In the active Army, the 10th Mountain Division and the 82d Airborne Division provided aerial reconnaissance along the southwestern border. The 3d Infantry Division provided aviation support to the U.S. Drug Enforcement Agency and local authorities in the Bahamas, while other units rendered similar assistance elsewhere.

The active Army and the reserve components devoted considerable aviation and other equipment to the counterdrug mission, including the loan of rotary and fixed-wing aircraft to the U.S. Customs Service. The

Army loaned, leased, or transferred more than \$50 million in equipment to federal, state, and local DLEAs in FY 1999. In addition to OH-58 and UH-1H helicopters, this equipment included weapons, night vision gear, and communications and electronic equipment.

Army Special Operations Forces

The U.S. Army Special Operations Command (USASOC) is responsible for the planning and execution of unconventional warfare, foreign internal defense, special reconnaissance, and direct actions in support of U.S. strategy. Traditionally associated with the Special Forces, or Green Beret and Ranger formations, Army special operations forces also include the 160th Special Operations Aviation Regiment and psychological operations, civil affairs, signal, and combat service support units. The last two functions are the responsibility of the 112th Special Operations Signal Battalion (Airborne) and the 528th Special Operations Support Battalion (Airborne), respectively.

Ground combat elements of Army special operations forces in FY 1999 included seven Special Forces Groups (five in the active Army and two in the ARNG) and the 75th Ranger Regiment. Civil affairs units are primarily USAR formations. The 96th Civil Affairs Battalion was the only active component unit in FY 1999, supplemented by four USAR civil affairs commands containing twenty-four battalions in eight brigades. Similarly, the active Army's one psychological operations (PSYOP) group of five battalions was distinctly outnumbered by the USAR's contribution of eight battalions organized into two PSYOP groups.

In training special operations units, the USASOC recognizes four truths about special operations. First, humans are more important than hardware. It is the quality and training of special forces personnel rather than technical superiority that gives them their unique capabilities. Second, quality is better than quantity. Special operations forces are almost always outnumbered. Their military effectiveness arises from superior personnel and superb training, two keys to success that cannot readily be replaced or improved by mere numbers. Because of their reliance on carefully selected and thoroughly trained personnel, special operations forces are subject to a third truth: They cannot be mass produced. Even the elite few who possess the aptitudes and qualities of a special operations soldier need to complete lengthy training programs to be effective. Arising out of the need for such carefully selected, highly trained personnel is the fourth truth of special operations forces: They cannot be created after emergencies occur.

Special operations forces are called to a variety of missions. In FY 1999 1st, 3d, and 5th Special Forces Groups, in conjunction with the U.S. Army

Military Police School, trained 1,778 DLEA personnel. Civil affairs and psychological operations units, largely from the Army Reserve, conducted operations in Bosnia and Kosovo. Special operations units participated in joint, multinational, and unilateral exercises, in addition to the Combat Training Center program. A total of 33,912 Special Forces personnel deployed to 120 countries on operations and training exercises in FY 1999.

Military Intelligence

The success of special operations, precision strikes, and virtually every other military mission depends on accurate and timely intelligence. The U.S. Army Intelligence and Security Command (INSCOM) provides national- to tactical-level information connectivity and intelligence support to Army commanders. In FY 1999, the INSCOM emphasized information systems in the effort to build the capabilities necessary to support the intelligence requirements of Force XXI while developing AAN initiatives. It is not surprising that the effort is named Intel XXI. At the end of FY 1999, the INSCOM identified several projects for further development. These projects included Trojan Classic, a system providing tactical and strategic intelligence to the leaders of the Army's major commands. Trojan Classic also is intended to assist in maintaining and developing the signals intelligence skills of intelligence personnel while helping build and maintain threat databases.

All such systems within the Department of Defense are being developed to create a unified system-of-systems approach to U.S. intelligence, surveillance, and reconnaissance (ISR) capabilities. The resulting smooth flow of information between sensors, commanders, and soldiers will enable U.S., allied, and coalition forces to strike rapidly and decisively at extended ranges and otherwise shape the battlefield. The Airborne Reconnaissance Architecture, the Future Imagery Architecture, the Integrated Overhead Signal Intelligence Architecture, and the Space-Based Infrared System are efforts directed toward that goal, developing interoperable digitized intelligence systems. Force XXI and AAN will enjoy an ISR strategy that integrates imagery, signals, and measurement and signatures intelligence into a single intelligence picture.

The Army's increasing reliance on computers and network-based information brings with it the possibility of external penetration for the purpose of espionage or sabotage. To meet that threat the Army initiated a study for the CSA on the viability of an institutionalized Information Technology/Information Assurance Corps. Although not affiliated with the INSCOM, the Army's existing information assurance program does include a counterintelligence mission similar to that anticipated for part of the proposed corps. In FY 1999, the Army acquired more than

five hundred intrusion detection systems and several hundred gateway and Internet Protocol blocking technologies to help secure information systems.

Nuclear, Biological, and Chemical Issues

The threat of weapons of mass destruction did not fade away with the end of the Cold War, and nuclear, biological, and chemical (NBC) issues retained their decades-old prominence in the Army of FY 1999. Protecting Army personnel from accidental or deliberate exposure to dangerous radiation, biological threats, and hazardous chemicals has become a routine concern. The federal government meets the broad spectrum of NBC threats at all levels, from laws and regulations governing the handling of hazardous materials to training for NBC warfare.

In FY 1999, the DOD focused on a threat from the middle of the spectrum—*bacillus anthracis*, the anthrax bacterium. At least seven nations, including Iraq, possessed anthrax weapons in FY 1999. The disease is the simplest and most common bacterial agent employed in biological weapons. Left untreated, the inhaled form of anthrax has a fatality rate that can approach 99 percent. Although heavy doses of antibiotics administered immediately after exposure may defeat the disease, treatment for inhalation anthrax postponed until symptoms occur is far less effective. The fatality rate for patients treated after becoming symptomatic is near 80 percent. With that in mind, the DOD began vaccinating all uniformed personnel against anthrax in March 1998.

The Food and Drug Administration approved the anthrax vaccine for human use in 1970. A full human vaccination requires six doses over eighteen months, with annual boosters thereafter. Reports of mild reactions to the injection have persisted since its introduction, but severe reactions occur less than once per one hundred thousand doses, and reactions requiring hospitalization occur less than once per two hundred thousand doses. No long-term side effects or fatalities have been associated with the vaccine. In exchange for what is most commonly a minimal or nonexistent reaction, those people vaccinated appear to receive significant protection against the disease. A substantial body of scientific evidence derived from animal experiments and studies of people working with imported animal hair, and thus occasionally exposed to the disease, demonstrate that the vaccine is effective. It provided the best long-term, large-scale protection against anthrax available in 1999.

Despite the obvious drawbacks of protective garments or post-exposure medication as alternatives to immunization, controversy over the need for the DOD's vaccination order and what some people perceived as a high risk of adverse reactions mounted in FY 1999.

Lack of public knowledge about anthrax and vaccination procedures fueled the debate, complicated by a flood of misinformation appearing on the Internet and rumors that administration of the vaccine to military personnel during the Gulf War was in some way related to later health problems. As a result of the confusion, some Army personnel refused the vaccination order.

As of 6 October 1998, just five days into FY 1999, the Army had given the first shot in the six-shot series to more than thirty-seven thousand personnel. An additional fifty-six hundred soldiers had received the fourth shot by that date. Eight soldiers had refused to obey the order to receive the vaccination, the beginning of a disturbing trend. Disposition of those soldiers, through nonjudicial punishment, administrative discharge, or other means, remained an open question as the vaccinations continued. By the end of FY 1999, the Army had announced no clear policy for the specific offense of refusing anthrax vaccination. Local commanders were left to apply the Uniform Code of Military Justice and guidance in the Manual for Courts-Martial and Army regulations to the general case of refusal to obey a lawful order. Most transgressors received administrative discharges or nonjudicial punishment under Article 15 of the Uniform Code.

The Army made its greatest strides in protection against the threat of NBC weapons in FY 1999 by creating special units to combat the relatively new threat of terrorists employing weapons of mass destruction. In response to the Defense Against Weapons of Mass Destruction Act of 1996, the secretary of the Army established the Consequence Management Program Integration Office (COMPIO) in January 1998. That office developed the concept for a new National Guard formation, the Weapons of Mass Destruction-Civil Support Team (WMD-CST). The first ten units of that formation became operational in FY 1999, with each state slated to receive one by FY 2003. The Army Reserve, in conjunction with the COMPIO, began fielding and training chemical defense companies with specialized hazardous materials response equipment and mass casualty decontamination equipment.

The WMD-CST units are composed of twenty-two full-time National Guard personnel of diverse specialties. In the case of a suspected nuclear, biological, chemical, or radiological (release of radiation without nuclear detonation) event, the local WMD-CST unit would immediately assess the incident and begin providing expert advice to civilian agencies. As the incident response proceeded, the team's role would shift to providing the interface between civil and military responders required for effective cooperation. Through the new National Guard units and the upgraded Army Reserve companies, the Army is much better prepared to face the changing NBC threat.

The Army in Space

The danger posed by weapons of mass destruction is intimately linked with their most prominent means of delivery. In FY 1999, the Army continued to maintain and develop systems to detect, warn against, and intercept ballistic and cruise missiles. The U.S. Army Space and Missile Defense Command (SMDC) is responsible for the Army's activities relating to the military threats and advantages associated with spacefaring. The SMDC directs the activities of Army Space Command as a subordinate command and the Space and Missile Defense Acquisition Center, the Space and Missile Defense Battle Lab, the Space and Missile Defense Technology Center, the Force Development and Integration Center, and the Army Space Program Office as subordinate elements. For a major Army command, the SMDC remains quite small in scale. In FY 1999, it consisted of only 606 military and 1,029 civilian personnel.

But the SMDC plays a larger role in national defense than its size indicates. The DOD has designated it as the leading proponent for the ground-based elements of national missile defense. It is also charged with developing a theater missile defense for the Army and integrating both weapons systems and space-related capabilities into the service as the Army's designated proponent for space. The importance of theater missile defense was apparent at the beginning of FY 1999, as U.S. policy grappled with recent nuclear tests in India and Pakistan and the development of longer-range missiles by Iran, North Korea, and Pakistan.

Through the SMDC, the Army improved the nation's ability to defend against such missile threats. The first demonstration of the National Missile Defense program's hit-to-kill ability against intercontinental ballistic missiles was scheduled to occur during FY 1999. Program delays forced postponement of the exoatmospheric kill vehicle test until early October 1999, after the end of the fiscal year. Other missile defense programs made more obvious progress. Continued development and testing of the Patriot Advanced Capability-3 (PAC-3) missile, with the ability to intercept targets at twice the range of earlier versions, expanded the Army's theater ballistic missile defense capabilities in FY 1999. The Theater High-Altitude Area Defense (THAAD) program, intended to supplement the advanced Patriot missile by extending theater defense capabilities to higher altitudes and fielding the first interceptor specifically designed to defend against theater ballistic missiles, advanced the Army's defensive capabilities. The THAAD achieved two successful intercepts in FY99 testing. Both the PAC-3 and THAAD intercepts were hit-to-kill, with the interceptors physically striking their targets. The Army's success in what has been called "hitting a bullet with a bullet" demonstrated the effectiveness of the hit-to-kill technology.

But not all missiles approach their targets on ballistic trajectories. Cruise missiles are a difficult target for air defense systems because of their small size and low altitude, which combine to limit detection ranges and response times. One solution to that problem is the modification of an existing forward air defense system developed by the Army Materiel Command's Aviation and Missile Command—the Avenger, which places eight turret-mounted Stinger missiles on a high-mobility, multipurpose, wheeled vehicle. In early 1999, the Army exercised an option to begin procuring an upgrade kit for the Avenger. The upgrade will provide “slew-to-cue” capability, directing the modified platform toward a target before its onboard fire-control system even detects the target. An electronic link with other sensors will provide the necessary information and shave precious seconds from Avenger's response time. By harnessing information network technology, the slew-to-cue upgrade will increase the Army's ability to provide theater defense against cruise missiles.

The SMDC made significant progress in an innovative cruise missile defense system during FY 1999. The Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) is a tethered aerostat equipped with a sensor array that enables it to see over the horizon, unlike land- or sea-based radar. It can thus detect low-flying cruise missiles much earlier than can other sensor systems. In exercises conducted in March, the JLENS for the first time provided a link between an offshore Navy Aegis cruiser and a land-based Patriot air defense system located at Fort Stewart, Georgia. The Army Acquisition Executive approved the JLENS for an acquisition category II program later that month. During the ROVING SANDS '99 training exercise, the JLENS successfully tracked multiple low-altitude targets at a range of two hundred miles.

Truly space-based technologies are becoming ever more important as the services digitize, providing crucial communications links and support for intelligence, navigation, and missile early-warning systems. The SMDC established the Force Development and Integration Center in FY 1997. The center addresses a mission given to the SMDC without corresponding resources: the integration into broader planning and development activities of doctrine, training, leadership development, organizational, materiel, and personnel functions related to space systems, national missile defense, and theater missile defense. The center's efforts produced several notable achievements during the fiscal year, including the Army's May 1999 announcement of the selection of the first officers designated as space operations officers. Officers designated in that field assist in managing and planning space capabilities and in integrating them into the Army. The center also drafted the Army's Theater Air and Missile Defense Master Plan and initiated the Army Space Mix Study to investigate potential space capabilities for the Army in the coming century.

In FY 1999, there were several other developments in the Army's pursuit of space capabilities. The Office of the National Missile Defense TRADOC System Manager was created and chartered in the fourth quarter of FY 1999 as a subordinate element of the SMDC. Its charter authorized the office to act as the Army's representative, manager, and integrator for the entire spectrum of doctrine, training, leader development, organizational, materiel, and soldier products associated with the land-based National Missile Defense system. And the SMDC Battle Lab's iridium telephone system became fully operational in November 1998. Supported by a constellation of seventy satellites, it is a truly global telephone system that improves the Army's communications capabilities anywhere in the world.

5

Reserve Forces

Force Structure

The armed services have increasingly called on their reserve components to support both contingencies and routine military operations in recent years as a result of Secretary of Defense Les Aspin's 1993 Bottom-Up Review process. Reforms initiated in the wake of the Bottom-Up Review reduced the size of the armed services and increased the role of the reserve components within them even as the end of the international stability imposed by the Cold War expanded the demand for U.S. peacekeeping, peace enforcement, training, and routine support deployments. The remaining active-component forces cannot sustain the resulting tempo of operations without augmentation and support. Reserve-component forces provide that support, binding the service components together and sharing the institutional and personal burdens of deployment. Across the Department of Defense (DOD), reserve-component forces provided 12.5 million man-days of service in FY 1999, roughly double the amount of such support provided only five years earlier. Clearly, the reserve components are an increasingly vital element of the U.S. armed services.

When required, the Army National Guard (ARNG) and Army Reserve (USAR) supply proficient units and skilled individual soldiers to support the operations of the active Army. Guard and Reserve formations ensure that the Army retains capabilities not ordinarily needed in time of peace while reducing the cost of maintaining those capabilities in the active Army. Restructuring efforts in the mid-1990s struck a new balance among the Guard, Reserve, and active Army to ensure that the entire force remains cohesive and interoperable.

Contingency planning now anticipates the involvement of reserve-component units from the beginning of operations, an aspect of the National Military Strategy intended to continue into the objective force—the Army After Next. High-priority Guard and Reserve units furnish needed capabilities to Army forces responding early in a contingency mission. As an operation matures, a growing proportion of the forces involved come

from the reserve components, replacing deployed active-Army units, providing support, and furnishing vital skills. This enables the active Army to avoid exhaustion and preserve its ability to respond to other crises.

The Reserve Forces Policy Board guarantees that members of the National Guard and the Army Reserve receive adequate training and equipment to play those roles and smoothly integrate with active-force units. Operating at the DOD level, the board champions the interests of reservists in all branches of military service. In FY 1999, the board's top priorities were fairness of pay and benefits, equipment appropriations, opening to reservists the personnel reliability program (which screens personnel for positions with access to nuclear materials), recruiting and retention, tax incentives for employers, and elevating the directors and chiefs of reserve components from two- to three-star rank.

Under terms of an agreement announced by Secretary Aspin in 1993, the Army Reserve is oriented toward combat service support functions, some of which are also found in the National Guard. In FY 1999, the Army Reserve provided 45 percent of the Army's combat service support units and 26 percent of its combat support units. These organizations included all of the Army's individual and collective training support divisions and railway units, 97 percent of its civil affairs units, 84 percent of its psychological operations units, 70 percent of its medical units, and 62 percent of its chemical and biological defense capability.

Under the same agreement, the Army National Guard provides the combat reserve of the U.S. Army while executing its traditional functions of disaster relief and emergency preparedness at the state level. Much of that combat reserve resides in the fifteen enhanced separate brigades of the Army National Guard. Defined as brigades with increased priority for personnel, equipment, and funding, those formations are capable of operating independently or as part of active-Army divisions. The Guard also provides one armored, two mechanized, one light infantry, and four infantry divisions to the Army's total capability, in addition to other combat, combat support, and combat service support units.

Soldiers in the Army Reserve and Army National Guard are assigned to one of three manpower management categories: the Ready Reserve, the Standby Reserve, and the Retired Reserve. The Ready Reserve, the largest of the three categories, is further subdivided. Most members of the Ready Reserve form the federally recognized units of the Selected Reserve, a subcategory that also includes individual personnel serving in the active-duty Guard and Reserve. In the Army Reserve, the Selected Reserve also includes individual mobilization augmentees, skilled soldiers ready to join and support active-Army units when needed. Subject to involuntary recall as part of the Ready Reserve are former active-duty or Selected Reserve personnel remaining in the Individual Ready Reserve (IRR).

An additional component of the Ready Reserve, the inactive National Guard, consists of personnel attached to a specific reserve unit who are not required to train regularly but remain subject to mobilization, similar to members of the IRR. The second major personnel category, the Standby Reserve, is not present in the ARNG. It consists of Army reservists designated as key civilian employees or reservists who have a temporary disability or hardship. They may be ordered to active duty in time of war or national emergency if the Ready Reserve lacks sufficient personnel to meet requirements. The Retired Reserve, the last of the three major personnel categories in the reserve structure, comprises individuals who are receiving retirement pay as a result of active duty and reserve service or who have qualified for such pay but have not reached age 60. All retirees with twenty or more years of service remain subject to a call to active duty by the secretary of the Army.

The FY98 National Defense Authorization Act created a new subcategory within the IRR. Early in the deployment cycle, under the president's selected reserve call-up authority, the secretary of defense may activate as many as thirty thousand IRR personnel in crucial military occupational specialties that have known shortfalls. Early use of reservists in such skill areas avoids widespread transfers from active Army units scheduled for later deployment. By recognizing members of the IRR in high-demand skill areas as a special subset of the Ready Reserve and granting the secretary of defense the authority to use them as such, the new legislation improved the Army's ability to support operations and sustain readiness.

In FY 1999, personnel in all manpower management categories totaled 391,049 in the Army Reserve and 362,059 in the Army National Guard. Those figures exceed the official FY99 end strengths of 206,836 USAR personnel and 357,469 ARNG personnel because they include the Retired Reserve. Many reserve-component personnel were assigned to the organized units of their components. The number of such units that the reserve components provided to the Army at the end of FY 1999 is listed in Table 16, identified by category and as a percentage of that type in the total Army.

Army National Guard units report to one of the fifty-four adjutants general of the states—a designation that includes Puerto Rico, Guam, the Virgin Islands, and the District of Columbia—until mobilized into direct federal service. Those officers are appointed by the various governors or equivalent officials, subject to a federal approval process, and they exercise operational control over Guard units performing their state missions. Organized and structured to support mobilization for major conflicts, the Guard attempts to balance its responsibilities for peacetime support, crisis response, emerging missions, and wartime mobilization.

TABLE 16—ARMY NATIONAL GUARD AND ARMY RESERVE CONTRIBUTIONS TO THE ARMY: 30 SEPTEMBER 1999

<i>Type of Unit</i>	<i>ARNG/USAR (Percent of type in total Army)</i>	<i>Type of Unit</i>	<i>ARNG/USAR (Percent of type in total Army)</i>
Divisions (institutional training)	0/7 (100)	Armored cavalry regiments	1/0 (33)
Chemical brigades	0/3 (100)	Air defense brigades	1/0 (25)
Water supply battalions	9/2 (100)	Engineer battalions (topographical)	1/0 (25)
Enemy POW brigades	0/1 (100)	Training brigades	0/2 (25)
Judge advocate general units	0/18 (100)	Theater army area commands	0/2 (25)
Public affairs units	28/29 (82)	Air traffic battalions	2/0 (40)
Exercise divisions	0/5 (100)	Field artillery brigades	17/0 (94)
Enhanced separate brigades	15/0 (100)	Infantry scout groups	1/0 (100)
Civil affairs units	0/36 (97)	Aviation groups	5/0 (71)
Petroleum support battalions	20/12 (92)	Air traffic groups	2/0 (50)
Medical brigades	0/6 (85)	Military intelligence battalions	14/5 (39)
Chemical battalions	0/8 (75)	Infantry divisions (mechanized)	2/0 (40)
Transportation composite groups	1/4 (80)	Army signal brigades	3/1 (20)
Motor battalions	2/12 (78)	Signal battalions	26/5 (36)
Maintenance battalions	13/5 (71)	Armor divisions	1/0 (33)
Engineer battalions (combat heavy)	14/14 (73)	Ordnance battalions	2/2 (29)
Psychological operations units	0/3 (81)	Special forces groups	2/0 (29)
Hospitals	0/3 (77)	Aviation brigades	9/1 (24)
Medical groups	0/8 (73)	Attack helicopter battalions	13/2 (45)
Engineer battalions (combat)	46/25 (70)	Area support groups	8/21 (44)
Petroleum groups	0/1 (50)	Light Infantry divisions	1/0 (20)
Corps support groups	4/10 (75)	Corps support commands	1/1 (50)
Field artillery battalions	100/0 (58)	Infantry divisions	4/0 (80)

TABLE 16— continued on next page

TABLE 16—*continued*

<i>Type of Unit</i>	<i>ARNG/USAR (Percent of type in total Army)</i>	<i>Type of Unit</i>	<i>ARNG/USAR (Percent of type in total Army)</i>
Air defense battalions	19/0 (48)	Medium helicopter battalions	3/1 (66)
Terminal battalions	0/4 (50)	Military police brigades	2/2 (43)
Military police battalions	12/19 (66)	Garrison support units	0/17 (100)
Regional support commands	0/11 (100)	HQ support elements	0/10 (100)
Eighth Army augmentation unit	0/1 (100)	USAR Small Arms Training Team	0/1 (100)
USARF school	0/1 (100)	USAR Information Processing Center	0/1 (100)

Note: ARNG = Army National Guard, HQ = headquarters, POW = prisoner of war, USAR = U.S. Army Reserve, USARF = U.S. Army Reserve Forces.

In FY 1999, the major changes in the ARNG force structure involved field artillery, air defense artillery, and homeland defense units. The Guard reorganized its self-propelled 155-mm field artillery units to better meet emerging needs. A wide-ranging air defense initiative redistributed resources from divisional batteries to higher priority enhanced separate brigade batteries. Acting in concert with the Air National Guard, the ARNG activated the first Weapons of Mass Destruction Civil Support Teams. These teams, with 80 percent of their personnel gathered from the Army Guard and 20 percent from the Air Guard, respond to chemical, biological, and radiological incidents to facilitate the cooperation of local and federal responders.

The ARNG also pursued reforms intended to enhance its integration with the active component. Redesigning of Guard divisions continued the conversion of the ARNG combat force structure to a higher percentage of the combat support and combat service support forces that the Army requires to meet the demands of the National Military Strategy. The integrated division program placed six ARNG combat brigades under the oversight of two active Army divisions to facilitate the brigades' integration and deployability. Teaming four ARNG divisions with their active Army counterparts for training purposes produced similar results. Creating multicomponent units with elements from the active component, the ARNG, the USAR, and sister services provides theater commanders with ready, integrated, and organized support. These efforts at integrating the Guard and the active component were assisted by assigning several active Army officers to command ARNG units, thereby improving understanding in both components.

Despite efforts to integrate and elevate the reserve components to coequal status with the active Army within the total force, the Army did not consistently maintain that focus during the fiscal year. Thus the ARNG's FY99 digitization programs were not directly linked to the broader Force XXI reforms. Digitization of the Guard began in FY 1997 with the deployment of improved command-and-control, communications, computer, and intelligence systems. But formal integration of those technologies and their host units into the Force XXI structure awaited the conversion of the 4th Infantry Division (Mechanized) to Division XXI design and the development of the first digitized corps, III Corps, in FY 2004.

That delay was partially offset in FY 1999 by the activation of the first multicomponent unit in the U.S. Army. The 32d Air and Missile Defense Command, activated during the first quarter of the fiscal year, consists of seventy-seven active-component and 104 National Guard personnel. The active element of the 32d is based at Fort Bliss, Texas, although its reserve personnel are members of the Florida National Guard. This multicomponent unit initiative is intended to enhance total force integration, improve the resource and readiness posture of Army units, and more efficiently draw on the unique capabilities of each component.

Strength and Personnel Management

The Army Reserve's year-end strength actually increased in comparison with that of FY 1998, climbing from 204,968 to 206,836 personnel. This represented a change from 98.5 percent to 99.4 percent of the static authorized strength of 208,000. The ARNG remained slightly over its authorized end strength, declining from 100.3 percent in FY 1998 to 100.1 percent in FY 1999. That FY99 percentage represents 357,469 personnel in a pool authorized at 357,223.

To achieve such a close correspondence between authorized and actual end strength, the National Guard closely monitored personnel trends and, when it became obvious that non-prior-service enlistments would fall short of the target, made rapid adjustments in its efforts to recruit prior-service personnel. Along the way, the Guard improved the overall quality of its non-prior-service accessions, as measured by high school graduation and performance on the Armed Forces Qualification Test (AFQT; itself a composite of scores from tests included in the Armed Services Vocational Aptitude Battery). Potential recruits are placed into one of five categories, depending on their percentile rank among all those taking the AFQT. The categories are identified in Table 17, including the routine subdivision of category III.

Although the Guard still failed to meet the Army's quality goals, FY99 efforts brought recruit quality substantially closer to the targets.

TABLE 17—ARMED FORCES QUALIFICATION TEST CATEGORIES

<i>Percentile</i>	<i>Category</i>
99–93	I
92–65	II
64–50	IIIA
49–31	IIIB
30–10	IV
9–1	V

Non–prior-service recruits with high school diplomas increased by 2.0 percent over FY 1998, to 86.9 percent of the total. The improvement almost halved the difference between FY98 figures and the Army’s goal of 90 percent. All remaining new accessions obtained high school degrees through general equivalency diploma (GED) testing and similar programs. ARNG accessions from categories I to IIIA of the AFQT attained a level of 60.2 percent in FY 1999, which slightly exceeded the DOD goal of 60 percent. This fell short of the 67 percent goal set by the Department of the Army, but the Guard did finish below the 2 percent ceiling on those scoring in category IV. Only 1.7 percent of new recruits scored in that lowest acceptable category.

Reductions in the number of junior officers during the force drawdown of the mid-1990s and competition from private industry produced a continuing shortage in company-grade officers. To partially offset the shortage, a congressionally mandated Combat Officer Reform Initiative, begun in 1997, authorizes the annual release of 150 lieutenants from their final twenty-four to thirty-six months of active-component service to fulfill the rest of their service commitments in an ARNG unit. Despite this successful program, the Guard continues to suffer a shortage of officers. A number of pilot programs have been launched in the Reserve Officer Training Corps and in Officer Candidate School to increase the production of lieutenants in the ARNG, but no conclusions about their effectiveness were reached in FY 1999.

Warrant officer strength in the ARNG was even more problematic. In FY 1999, the Guard possessed only 74.3 percent of its required technical warrant strength. Even warrant officer aviator strength dipped below required levels, if only to 99.4 percent. This looming shortage in the ranks of the Guard’s technical experts is a source of concern for an increasingly sophisticated force.

In addition to warrant officers and senior noncommissioned officers, the reserve components draw heavily on the expertise and experience of

full-time support personnel. Uniformed members of the Active Guard and Reserves (AGR) join military technicians (full-time civilian employees of the reserve components subject to mobilization as uniformed members of those components as a condition of their employment) to maintain the equipment, staff the offices, and perform the many tasks necessary to maintain the readiness and deployability of the reserve components. But the full-time support levels that both the ARNG and USAR are authorized to maintain are far below their validated needs. The shortage of full-time support personnel was a major concern for leaders of the National Guard Bureau and Army Reserve during FY 1999.

Training and Readiness

Members of the active component and the civil service join AGR personnel and military technicians to meet the reserve components' needs for full-time support. As a group, they organize, administer, recruit, train, and maintain reserve units. In FY 1999, the USAR full-time support personnel authorization fell 12,895 positions (37.9 percent) short of the number required. ARNG authorizations left 18,027 required positions unfilled (27.5 percent of those needed).

Such shortages threaten force readiness. The increased operational tempo of reserve units and the growing complexity of their equipment demand high levels of maintenance and administrative support. The Guard received some measure of relief from the situation during FY 1999 in the form of an increase in AGR authorizations for colonels and sergeants major. The need for representation of full-time support personnel throughout all levels of command provided a key argument in expanding those senior-grade positions. The expansion also offered needed promotional opportunities for AGR personnel whose careers were stalled by the lack of adequate grade authorizations.

Reserve force readiness is an issue of growing concern. Anecdotal evidence suggests that the operational tempo of reserve units is adversely affecting recruiting and retention at the same time that it strains resources and maintenance capabilities. Within the Army Reserve, the recruitment and retention of health care professionals emerged as a force readiness issue even though the FY99 National Defense Authorization Act approved significant increases in the health profession loan repayment program. Despite that authorization, no funds were actually appropriated to ensure the continued financial appeal of USAR service to health care professionals.

Depot maintenance protects the health of the Army's heavy equipment, just as hospitals protect personnel. When routine maintenance no longer suffices, heavy equipment may be sent to a depot for a more thorough overhaul. Reserve forces lack a maintenance float, or pool of ready

replacement equipment, which can temporarily replace items sent to maintenance depots. Units sending heavy elements into depots must, therefore, do without the pieces in question until they passed through a backlog of maintenance tasks. Insufficient funding, including the shortage of full-time support personnel, over previous years left both the USAR and the ARNG with substantial maintenance backlogs in FY 1999. Funding levels began to increase in FY 1998 and continued to do so in 1999, enabling depot personnel to begin reducing the accumulated backlogs. Although still problematic, depot maintenance proved less of a barrier to force readiness in FY 1999 than in the recent past.

In FY 1997, the Guard introduced the Objective Supply Capability Adaptive Redesign (OSCAR) software. By automating the National Guard Bureau's management of major items and providing an interface with the Standard Army Retail Supply System, OSCAR allows the Guard to identify excess stocks and maximize their availability in all fifty-four states and territories. By the end of FY 1999, OSCAR had significantly improved the equipment readiness of National Guard units, and had identified more than \$3.4 billion in excess stocks.

Similar programs include the European Excess Equipment Project Operation (EEEPO), launched in FY 1993. Under EEEPO, a team of National Guard warrant officers continues to locate serviceable and economically repairable equipment and parts in Army installations in Europe. In 1999, the EEEPO team was co-located with the Army's Equipment Maintenance Center-Europe in Kaiserslautern, Germany. From that location the team can efficiently employ ARNG personnel on overseas deployment training status to repair equipment. When available, such personnel cost \$67 less per hour than do Army Materiel Command-Europe contractors. Equipment that those personnel salvage is returned to the United States using space available on National Guard cargo aircraft and is processed in one of five readiness sustainment maintenance sites. Located at Fort Riley (Kansas), Camp Shelby (Mississippi), Limestone (Maine), Saginaw (Texas), and Clackamas (Oregon), these sites complete repairs and distribute the equipment to the Guard. As of the end of the fiscal year, the program had salvaged equipment worth more than \$200 million, at a cost of only \$8 million.

By providing ARNG units with a source of affordable replacement equipment, the EEEPO helps to ensure force readiness in the equipment and supplies on hand category of DOD's Global Status of Resources and Training Systems (GOSORTS) unit readiness scale. The equipment and supplies on hand category is one of four readiness categories used in the GOSORTS scale. The others are personnel, equipment condition, and training. Each measure is identified by a letter: equipment and supplies on hand status level (S), personnel status level (P), equipment condition status level (R), and

training status level (T). In combination these measures produce an overall unit resource and training level (C) status rating. The C-level ratings, which represent total capability at mobilization, are defined in Table 18.

TABLE 18—UNIT READINESS LEVEL AT MOBILIZATION

<i>C-Level Rating</i>	<i>Definition</i>
C-1	Can perform full wartime mission
C-2	Can perform most of wartime mission
C-3	Can perform some of wartime mission

In January 1999, the Joint Chiefs of Staff warned Congress that readiness was deteriorating in all branches of the armed services. Despite such warnings and supporting anecdotal evidence, ratings on the GOSORTS scale remained high in FY 1999. Critics of the scale, which was developed during the Cold War, contend that it is not sensitive enough to document the strain imposed by numerous peacekeeping missions and other deployments in the post–Cold War era. The 1999 National Defense Authorization Act directed the DOD to improve readiness reporting and make the system more sensitive to the impact of current operations.

Training is a key element of force readiness. When called to perform their missions, reserve-component forces are expected to perform at or near the level of their active Army counterparts. The relative lack of training time in the reserve components makes high-quality training programs vital to the USAR and the ARNG. Annual personnel loss rates of nearly one fifth for the National Guard and one third for the Army Reserve complicate training demands. The departure of skilled and experienced personnel causes shortages in specific military occupational specialties and thus places further demands on the training system.

To meet the need for ongoing training and maximize the yield of an average of only thirty-nine training days each year, the reserve components have steadily increased their use of new training technologies, such as advanced distributed learning. Accessible wherever required and capable of being tailored to meet individual needs, such computer-based instruction is ideally suited to the needs of widely dispersed Guard and Reserve personnel. Technological advances in weapons systems training aids and battle simulators also make realistic training more available to reserve-component forces, while they save the costs, transportation time, and environmental impact of more frequent field training.

The National Guard stresses realistic, sustained, multi-echelon, and totally integrated training at all levels. A basic four-year strategy guides

unit training, with enhanced separate brigades joining two iterations of the strategy into an eight-year cycle that culminates in a Combat Training Center (CTC) rotation. In FY 1999, Tiger XXI, the SIMITAR training program, was introduced to improve the performance of Guard units participating in CTC rotations. Combining live, virtual, and instructional training, the program focuses on training at the battalion staff, company, and platoon levels.

In the field, exercises help ensure that the reserve components and the active Army train to equal standards. The ARNG and the USAR participated with the active component in virtually every joint exercise held in FY 1999, thereby promoting the seamless integration of the total Army force called for in the National Military Strategy. Direct interactions with the other services were not overlooked. The Joint Readiness Training Center at Fort Polk, Louisiana, exposed all fifty-two company-size reserve-component units training there during FY 1999 to the demands of joint operations.

Overseas training provides reserve component units an opportunity to very closely simulate operational deployment and to participate in combined and joint exercises. In fact, there is often little distinction between training and operational deployments. USAR units have steadily increased their participation in such opportunities in recent years, undertaking nation-building missions and peace support operations and supporting deployed commands. More than thirty-three thousand National Guard members participated in twenty-one overseas exercises in FY 1999. Like their Reserve colleagues, Guard members obtained first-hand experience in support and stability operations, national assistance, and operational support missions under a unified commander. Overseas training deployments provide an opportunity to practice mobilization, one of the reserve components' most important contributions to force readiness. The primary focus of reserve-component training is to meet post-mobilization training requirements. When a unit is being mobilized, deployment schedules consider its personnel, equipment, and training readiness. Required predeployment training times vary according to the size and type of unit and its readiness. Initial readiness processing, final maintenance, recovery, and preparation for loading consume approximately twenty-six days for an enhanced separate brigade. Depending on theater-specific requirements and its place in the eight-year training cycle, a brigade could require as many as sixty-four days of training prior to departure. That figure is significantly less for units at the peak of the training cycle, and all enhanced separate brigades are deployable within ninety days of mobilization. For a full division, that ceiling extends to 150 days. Combat service support units are generally capable of deploying within just ten days.

Mobilization

Those deployment timetables were tested in FY 1999, as they have been with increasing regularity throughout the 1990s. The Army's reserve components now find themselves mobilized for various purposes more often than ever before. As a result of the Bottom-Up Review and Force XXI reforms, the active Army has become dependent on reserve formations to conduct operations of any significant scale or duration.

Mobilization—the act of bringing reserve component units or individuals to active-duty status—may be accomplished by several means. Under a Presidential Selected Reserve Call-up, prescribed in Title 10, United States Code, the commander in chief may order as many as two hundred thousand members of the reserve components to active duty for as long as 270 days. In April 1999, President Clinton used this power to dispatch 5,727 members of the various service reserve components to Kosovo.

For more limited contingencies, volunteers are sought before ordering involuntary mobilization. The service secretaries have the authority to summon members of the Ready Reserve to fifteen days or less of active duty under Title 10, United States Code, Section 12301(b). State governors have the authority under state law to summon the National Guard to state service. Governors may also request that the president federalize the National Guard during domestic emergencies, such as natural disasters, civil disturbances, or terrorist incidents. The Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 permitted presidential mobilization of reserve components for emergencies involving weapons of mass destruction.

Authority for calling the reserves into extended involuntary active duty rests with the president. On the recommendation of the secretary of defense, the president may consult with Congress and issue an executive order authorizing an involuntary call-up of reserve-component forces. The secretary of defense then identifies specific requirements and the units necessary to meet them. When the orders are issued, Army Reserve and Army National Guard units move to one of twenty-seven mobilization sites. There they complete necessary personnel administration procedures, receive theater-specific training required by the gaining command, and prepare for deployment. After validation for deployment, units move to a port of embarkation for air or sea transit to the theater of operations.

Reserve formations mobilized for participation in Operations JOINT FORGE (Bosnia), JOINT GUARDIAN (Kosovo), and SOUTHERN WATCH (Kuwait/Saudi Arabia) during FY 1999. The first ARNG military police units arrived in Bosnia and Hungary during the fiscal year. A total of 865 Guard personnel participated in Operation JOINT FORGE before the year ended, supporting peacekeeping efforts in the region. Further to the south,

fifty-three ARNG members from eleven states provided medical, legal, religious, and security support for the Operation JOINT GUARDIAN base camp, Camp Able Sentry, in Skopje, Macedonia. A Presidential Selected Reserve Call-up summoned more than two hundred USAR members to Germany as replacements for active-Army personnel deployed to Kosovo. Their mission was typical of the reserve components' role in emerging contingency operations: relieving active Army forces or personnel to share the strain of high operational tempos and to maintain overall readiness. Toward that end, the first rotations of infantry units from the enhanced separate brigades furnished security for Patriot missile batteries protecting SOUTHERN WATCH forces in Kuwait and Saudi Arabia. Two National Guard Aviation Task Forces—consisting of AH-64 attack helicopters, UH-60 assault helicopters, and air traffic control parties—provided additional support in Kuwait. Approximately five hundred individual reservists provided support elsewhere for operations of the European Command, the Central Command, and the Special Operations Command.

Members of the USAR deployed to the Middle East on 16 December 1998 to support Operation DESERT FOX, the destruction of sites in Iraq related to that nation's efforts to create, procure, store, and maintain weapons of mass destruction. Approximately forty individual soldiers from the 310th Chemical Company, a biological warfare detection unit, and a liaison team from the 490th Chemical Battalion supported DESERT FOX by providing early warning of any potential biological threat.

Reserve-component forces honed their mobilization and operational skills by participating in a number of large-scale exercises during FY 1999. A total of 12,777 ARNG personnel took part in twenty different European Command exercises in FY 1999, including infantry and engineer rotations with the opposing force at the Combat Maneuver Training Center-Europe. Central Command deployments included support for and participation in exercises INTRINSIC ACTION, LUCKY SENTINEL, NATURAL FIRE, IRON COBRA, and BRIGHT STAR. Pacific Command employed 3,535 ARNG personnel during FY 1999 in support of exercises FOAL EAGLE, YAMA SAKURA, COBRA GOLD, ULCHI FOCUS LENS, and the Eighth Army's Reception, Staging Onward Movement, and Integration command post exercise. ARNG special forces units participated in many of these exercises and joined others under the aegis of Special Operations Command and of Joint Forces Command. A total of 941 ARNG Special Forces personnel deployed during FY 1999.

The civil-military Innovative Readiness Training (IRT) program developed from President Clinton's call to "rebuild America" and subsequent legislation. The IRT programs provide the Army, particularly the reserve components, with an opportunity to combine combat service support training, operational deployment, and civil support into one mission within the United States. During FY 1999, Army Reserve dental

teams deployed to the Rosebud Indian Reservation in Rosebud, South Dakota, and the Crow/Northern Cheyenne Indian Reservation in the Crow Agency, Montana, as part of Operation WALKING SHIELD. Conceived by the Walking Shield American Indian Society, the deployment provided soldiers with operational and mobilization training while they helped improve the quality of life among Native Americans on those reservations. This tiny operation, consisting of two teams totaling three dentists and two dental technicians, had tremendous impact on both local health and the teams' experience levels. In two weeks, the teams completed approximately 100 oral surgeries, 60 pediatric dental procedures, 40 root canals, 150 extractions, 150 restorations, and more than 1,500 dental cleanings and exams.

Reserve-component personnel participated in two other IRT deployments during the fiscal year. Operation WHITE FANG dispatched an additional dental team of Army reservists to the Arctic Slope region of Alaska, where they performed a mission similar to that of WALKING SHIELD. The final IRT mission of the year, Operation ARTIC CARE '99, also provided combat service support training to reserve personnel and humanitarian assistance to Native Americans in Alaska, this time in the southwest region of the state. From 20 March through 3 April, the 109th Medical Detachment (Veterinary), 63d Regional Support Command, taught 460 children how to avoid dog bites, trained five local residents in emergency rabies vaccination procedures, and taught safe food-handling techniques. The unit vaccinated 773 dogs and cats against rabies and 559 dogs against distemper, and it dewormed 731 animals.

Reserve-component forces also formed the core of the Army's response to a crisis that was at once training mission, operational deployment, and civil support operation. In October 1998, Hurricane Mitch followed hard on the heels of September's Hurricane Georges. The two massive storms devastated much of the Caribbean and large areas of the U.S. Gulf Coast. The commander in chief, U.S. Southern Command, responded with overseas deployment training and a series of exercises authorized by the Joint Chiefs of Staff. Operation NEW HORIZONS, supported by the Emergency Supplemental Appropriations Act of 1999, provided both disaster relief for the affected areas and practical training for U.S. personnel.

Support to Civil Authorities

Humanitarian missions are nothing new for the Army National Guard and the Army Reserve. At the state level, the National Guard mission has always been to protect life and property while preserving peace, order, and public safety. At the federal level, the Army Reserve mission has always been to provide support, when requested, to local municipalities, cities, and states when their relief efforts have been overwhelmed or exhausted. Governors

of Mississippi, Louisiana, and Florida responded to Hurricanes Georges and Mitch by summoning Guard personnel to provide security, evacuation assistance, emergency relief, and support to recovery efforts. Keeping the public informed during major domestic disasters is also an important task. The Army Reserve provided more than five hundred man-days of public affairs support to assist in the Hurricane Mitch relief efforts.

But the damage the two storms inflicted on the United States paled in comparison with the havoc they wreaked throughout the Caribbean basin. Between January and August 1999, a total of 20,800 Army Reserve personnel deployed to Honduras and various storm-damaged islands, including Puerto Rico. There they distributed relief supplies and provided emergency support. Engineer units constructed medical facilities, repaired roads and bridges, and dug new wells. Through the Army Reserve, with Army National Guard, active Army, and other military personnel supporting their operations, the United States provided relief to millions of people in the affected region.

The ARNG responded to emergencies large and small at the direction of state governors during FY 1999. In addition to the 82,212 man-days of hurricane relief efforts, ARNG personnel provided a total of 109,778 man-days of support to local civil authorities. Any detailed recounting of such missions would amount to a catalog of the largest natural disasters and law enforcement challenges of the year. But their scale alone is telling.

Fires, floods, and other natural disasters pose threats in wilderness areas and developed regions alike. During FY 1999, fifteen states called on the National Guard for 13,637 man-days of firefighting and related support activities. Guard personnel also respond to other elemental threats. Flood control and relief activities in nine states required 6,176 man-days before the year expired, and drought-related missions consumed 3,409 man-days in ten states. The fact that some governors called on the Guard for both flood and drought relief indicates the variety of challenges confronting ARNG personnel and their flexibility in meeting them.

Tornadoes are a seasonal danger in much of the United States. In Oklahoma alone, the National Guard provided 10,728 man-days of tornado response time. The governors of eight other states called on Guard personnel for an additional 10,117 man-days of effort to combat the impact of the deadly storms. Other weather-related problems in fifteen states brought 4,293 man-days of ARNG labor to the aid of those affected.

The Army National Guard is also responsible for preserving peace, order, and public safety. In that capacity, Guard personnel render frequent assistance to law enforcement and other federal, state, and local agencies. Such agencies received 57,185 man-days of assistance from Guard personnel in FY 1999. Of that total, 28,669 days were devoted directly to assisting law enforcement agencies. The vast majority of the time that ARNG personnel

spent on law enforcement missions—27,523 of the 28,669 total man-days—was provided by the Puerto Rico Army National Guard.

That figure demonstrates the size of the National Guard's commitment to antinarcotic efforts. In pursuit of the National Drug Control Strategy, governors assign Guard personnel to demand-reduction and drug interdiction activities. Guard missions in demand reduction may be broadly characterized as education and community outreach programs. In drug interdiction, the ARNG executes a number of missions, including cargo inspection assistance, aerial and ground reconnaissance, intelligence analysis, training, construction of border fences and roadways, and map production. More than two hundred Guard linguists assisted Drug Enforcement Administration and Federal Bureau of Investigation drug investigations during the year. An additional five hundred personnel supported the U.S. Customs Service at critical points of entry. A total of 116 OH-58 helicopters, seventy-six outfitted with forward-looking infrared (FLIR) equipment, supported local, state, and federal marijuana eradication missions. USAR personnel also contributed to the Army's counterdrug efforts, providing 565 personnel for 115 support missions in FY 1999. Those missions included four aviation deployments using FLIR equipment along the southwest border and the dispatch of 298 intelligence analysts who provided invaluable linguistic services to support ongoing drug investigations conducted by civilian authorities.

Equipment and Maintenance

The surveillance, reconnaissance, aerial support, and intelligence analysis that ARNG and USAR members contributed to counterdrug efforts bespeak the reserve components' use of advanced technology. Force digitization and the ongoing procurement of numerous systems, from M16A2 rifles to the multiple launch rocket system (MLRS), continued to increase the sophistication of the reserve components' equipment and expand their capabilities. In keeping with their integration into the total Army, the reserve components' equipment is increasingly indistinguishable from that of the active Army.

But the Army still has some distance to go before units of the active and reserve components cannot be distinguished by the age and sophistication of their equipment. Between FY 1997 and the end of FY 1999, the ARNG received more than seventy thousand M16A2 rifles to replace the older M16A1 variant. It was expected that replacement of the older weapon, which uses different ammunition and requires different replacement parts, would not be complete until FY 2003. Guard units also began fielding the M240B medium machine gun. Receipt of the MK19 automatic grenade launcher and M249 squad automatic weapon continued during the year,

but, according to the schedule at the end of the fiscal year, the thirty thousand M249s weapons to be delivered by FY 2002 will still only meet 80 percent of the Guard's requirements.

The difficulty in completely equipping National Guard units with current small arms is at least in part a result of the procedure for funding equipment procurement in the reserve components. Traditionally, the National Guard and Reserve Equipment Appropriation (NGREA) provided significant support to the reserve components' ability to purchase sufficient equipment to meet mission requirements. But the NGREA is separate from the services' individual appropriations, and as the DOD reemphasized its long-standing policy that parent services are solely responsible for funding the equipment needs of their reserve components, the apparent need for NGREA support disappeared. Since 1997, the NGREA has declined substantially as the Army has continued to experience difficulty in meeting the equipment needs of even the active component. The Army's budget has not increased to offset the reduction in NGREA funding. Reserve-component forces therefore find it increasingly difficult to meet their needs for upgrades, modernization, and equipment training.

The response to this situation has been driven by the Army equipping policy. That policy, intended to produce modern, fully equipped forces, uses a two-step process to balance total Army readiness against the needs of early-deploying units. The priorities are simple. First and foremost, all units must have sufficient equipment to maintain minimum readiness standards. Second, equipment needs are met in the order of precedence set by the Department of the Army Master Priority List. In accordance with the priorities of that list, the "first-to-fight" principle applies. Units likely to be involved in combat first have higher priority and receive the most modern equipment.

Although the reserve components receive direct support through the Army's formal budget process, the diminished NGREA funds continue as a significant resource. The ARNG spends its limited NGREA money on items that are unique to the Guard or that are not included in the standard Department of the Army budget process. Even in the austere budget environment fostered by decreased NGREA funding and the lack of a corresponding increase in Army appropriations, the National Guard and the Army Reserve continued to receive new equipment and needed upgrades, thereby significantly improving force readiness. The Guard reported that it possessed 92 percent of its required major equipment in FY 1999, up from 81 percent the prior year. The Army Reserve reported 84 percent of its major equipment needs as met, up from 75 percent in FY 1998. Although these figures lag behind those of other service reserve components and the DOD reserve-component average of 96 percent for FY 1999, the trend is positive.

The Army remains committed to equipping its reserve components to the same standards as the active force, but had not achieved that goal by the end of the fiscal year. In accordance with the Department of the Army Master Priority List, the Army Reserve received substantial equipment deliveries from active-Army units. These included 10 conveyors, 12 armored vehicle-launched bridges, 12 Volcano mine dispensers, 1,470 single-channel airborne radios, 11 generators, 24 smoke generators, 3,026 squad automatic weapons, 24,637 M40 protective masks, 630 M42 protective masks, 19 palletized load system trailers, 32 M41 Protective Assessment Test Systems for the M40 mask, 57 dump trucks, 31 wheel-mounted cranes, 288 modern burn units, and 11 shower units. The Army also provided substantial equipment for the National Guard during FY 1999. This included 17 UH-60A Black Hawk helicopters, 6 MLRS launchers, 153 heavy equipment transporters, 305 line haul tractor trucks, 70 bulk haul trucks, 50 high-mobility trailers, 96 demountable cargo beds, 48 palletized load system trucks, 5,000 single-channel airborne radios, 110 advanced field artillery tactical data systems, 126 artillery muzzle velocity systems, 264 light smoke vehicles, 394 generators, 394 floodlight sets, 13 twenty-ton dump trucks, 5 hydraulic excavators, 1,525 machine guns, 522 grenade launchers, and 2,047 tracked combat vehicle weapons.

Reserve-component forces met other needs through NGREA funds. For example, the National Guard purchased simulators and trainers for combat and combat support systems, including the Armor Fully Integrated System Trainer and the Engagement Skills Trainer. The ARNG also filled some equipment shortages in high-priority units such as the enhanced separate brigades and light and medium truck companies. The Army Reserve acquired conversion kits to modernize its new multi-role bridge companies and sixty-nine glider kits to update older truck tractors.

Both reserve components largely equip their lower priority units with older equipment transferred from modernizing elements of the active Army. That newly obtained equipment, and existing stocks, can be upgraded and repaired to provide valuable service. The Guard converted 350 M1037 HMMWV "Humvee" shelter-carriers to the standard M998 cargo/troop carrier version at its Texas tactical wheeled vehicle sustainment repair site, and a twin facility in Maine converted 120 M996 mini-ambulance HMMWVs to the M998 variant. Lack of funds at the ARNG's equipment depots delayed similar overhaul programs for M9 armored combat earthmovers and the M60 armored vehicle-launched bridge.

The Army Reserve undertook a number of similar projects. During fiscal 1999, its facilities converted 30 five-ton cargo trucks to dropside trucks, 139 gasoline-powered generators to diesel, 60 M915 line haul tractors to the updated M915A4 configuration, 295 gasoline-powered compressors to diesel, 27 heavy expanded mobility tactical trucks to

common bridge transports, 43 M967A1 fuel tankers to the multifunctional fuel tanker configuration of the same designation, 9 M101A1 trailers to the M101A2 model, 9 M101A2 models to M101A3s, and 180 M1037 HMMWV shelter-carriers to the standard M998. The Reserve also refurbished forty-one bath and shower units and completed twelve MLC 70 armored vehicle-launched bridge upgrades. A planned upgrade to the M109 shop van was delayed.

The National Guard currently fields two variants of the Abrams main battle tank. Enhanced separate brigades are equipped with the M1A1, mounting a 120-mm main gun. Other units continue to operate the older M1, with a lighter and shorter-range 105-mm main gun. The Army maintained its efforts to upgrade the M1s to M1A1 models, with their greater firepower and survivability, in FY 1999. Congress included \$70.2 million in its FY99 appropriation to procure M2A2ODS Bradley infantry fighting vehicles for the ARNG. Delivery of the first vehicles was set for FY 2001.

Maintaining such a wide variety of complex equipment is no easy task. It has benefited from the nearly complete adoption of Velocity Management (VM), a Total Army process used by all but one of the ARNG's 54 state or territorial establishments in FY 1999. Under VM, the tradition of stockpiled commodities is replaced by an automated process similar to that used by private industry that relies on automation, speed, and transportation to get commodities quickly from the factory to the soldier. Receipt processing for repair parts has benefited tremendously from VM.

Commercial models have also been adopted in the actual maintenance and repair of reserve-component vehicles. The Army's Integrated Sustainment Maintenance (ISM) program has been in place since FY 1993. Under its provisions, general support maintenance activities in Army Forces Command, Training and Doctrine Command, the Army Reserve, and the ARNG combined support maintenance shops and maneuver area training equipment sites compete for repair work. Figures from the ARNG demonstrate the effectiveness of the ISM program in FY 1999. Guard units in thirty-seven states participated as customers during the course of the year, shipping 6,059 general support/repair exchange components to other ARNG, Army Reserve, and active Army facilities for repair. Those facilities returned 5,304 of those repaired components for customer use, saving ARNG units \$17.9 million through the competitive process. This dramatic increase from the \$8.2 million saved in FY 1998 explains the Guard's decision to expand the types of equipment it is repairing under the program from seventy-one at the beginning of FY 1999 to 119 at year's end.

Such cost-saving measures have great potential in an undertaking as large as maintaining the National Guard. The fifty states, the District of

Columbia, Puerto Rico, Guam, and the Virgin Islands host 779 ARNG surface maintenance facilities that support more than six thousand units. The facilities include 645 organizational maintenance shops, 68 combined support maintenance shops, 39 unit training equipment sites, and 24 maneuver area training equipment sites. Combined, they employed a workforce of 9,979 federal technicians in FY 1999. That personnel level was also a source of concern for the reserve components. Maintenance facilities are largely staffed by full-time support personnel. Both the Army Reserve and the Army National Guard had validated requirements for such personnel well in excess of their authorized FY99 strength. Depot maintenance as a whole remained underfunded at a time when high operational tempo and aging equipment continued to place increased demands on all Army maintenance facilities.

The director of the Army National Guard and the chief, Army Reserve, listed an increase in full-time support personnel as major goals in their Program Objective Memoranda for FYs 2001–05, submitted on 11 February 1999. Expanding that labor pool would help alleviate backlogs at service depots and better equip the reserve components for the maintenance challenges presented by high operational tempos. Those two results would also improve the combat readiness of the total Army. Despite the successes of the European Excess Equipment Project Operation and of Integrated Sustainment Maintenance, and slight decreases in depot maintenance backlogs, the ARNG reported an overall decline of 1 percent in its combat readiness for FY 1999. The decline may be explained by high operational tempos and the Army's increasing integration of the reserve and active components that took a toll on the personnel and equipment of the National Guard and the Army Reserve during the year.

6

Logistics

Management and Planning

Meeting the Army's need for supplies and equipment has always been a formidable challenge. The transition from forward positioning to domestic basing and multiple, often remote, and quickly developing deployments during the 1990s has not reduced the complexity of meeting the Army's requirements for timely, reliable, and cost-effective logistic support. The Army Materiel Command (AMC) and other agencies continued to meet those requirements in FY 1999 while developing new systems and procedures to improve future performance.

Overall responsibility for Army logistics changed during FY 1999 in accordance with Secretary of the Army Louis Caldera's 16 February announcement of a secretariat reorganization. The assistant secretary of the Army for installations, logistics, and environment (ASA-IL&E) transferred logistics operations to the assistant secretary of the Army for research, development, and acquisition (ASA-RDA). Although it directly affected only nine personnel, the shift consolidated acquisition and logistics policy oversight under a single office to improve efficiency. The titles of the assistant secretaries, and their offices, changed to match their new duties. The ASA-RDA became the assistant secretary of the Army for acquisition, logistics, and technology; the ASA-IL&E became the assistant secretary of the Army for installations and environment.

In the November 1997 *Defense Reform Initiative Report*, the Department of Defense (DOD) established a blueprint for improved business processes, commercial alternatives, consolidated functions, and streamlined organizations to modernize the supply and acquisition process and generally improve the fiscal efficiency of the armed services. Borrowing from the best practices of major corporations, the DOD identified working capital funds and electronic commerce as two areas of potential development.

The Working Capital Funds Policy Board establishes policies at the DOD level that are then executed within the five funds that collectively make up the Defense Working Capital Fund (DWCF). In addition to the

Army Working Capital Fund, the components of the DWCF are the Navy and Air Force Working Capital Funds, the Defense Commissary Agency Working Capital Fund, and the Defense-Wide Working Capital Fund. These funds operate continually without fiscal year limitation and collectively account for roughly one quarter of the DOD direct appropriations, creating buyer–seller relationships between the services and within the DOD. Through the DWCF structure, the Army finances support activities such as depot maintenance, supply, research and development, transportation, and information services.

Operations of the DWCF underwent substantial changes during the late 1990s as the Department of Defense sought to establish a more businesslike, vendor–customer relationship in intradepartmental transactions. DWCF transactions involve approximately \$70 billion annually, as military units purchase goods, services, and industrial capability from support organizations. With such a large volume, even minor cost reductions and efficiencies offer significant savings. The goal of the DWCF is not cost reduction, however, but an improvement in the way the DOD and the services execute and document their internal financial transactions.

Electronic commerce is a steadily growing trend in business and, more recently, in the DOD. It offers both improved documentation and cost reduction. This application of digital technology to automate and improve business functions requires the integration of business activities in all services through common tools and seamless information transfers. Business affairs within the Defense Department remain expensive and slow because of their substantial requirements for personnel and paperwork and the complexities of coordinating the flow of information—situations that electronic commerce promises to correct. Transferring business processes to digital systems eliminates the time formerly spent moving paper documents from one office to the next. Electronic information processing is inherently faster and more responsive, offering cost reductions and improved service. For that reason the Joint Electronic Commerce Program Office, which opened in May 1998, continued to develop a plan to establish and implement electronic commercial practices, products, and standards within the Defense Department wherever practical.

The Defense Finance and Accounting Service (DFAS), as the armed forces' primary agent for financial management reform, shares those goals. In FY 1999, the DFAS continued to promote the paperless exchange of financial information through electronic document management (EDM), electronic funds transfer (EFT), and electronic data interchange (EDI). EDM, relying heavily on World Wide Web applications, replaces paper-based forms and reports with their electronic equivalents to facilitate control, analysis, and overall efficiency. EFT substantially reduces the cost of disbursements by paying salary, travel, and contract expenses without

recourse to paper. EDI improves on EFT by directly exchanging payment information with vendors.

In addition to funds management, the Defense Reform Initiative called for a more general overhaul in defense acquisition, with the goal of superior goods and services faster and cheaper than current practices allowed. Toward that end, the DOD identified twelve defense acquisition goals to be met by FY 2000, goals that all of the services pursued during FY 1999. By achieving those goals, the services can release money for modernization efforts without requesting an increase in total budget authority.

Army logistics personnel continued to include the goals of the Defense Reform Initiative in their own efforts during FY 1999. The complexity that logisticians and administrators confront in reforming Army business practices is indicated by the Army Audit Agency's review of the FY98 Army Working Capital Fund (WCF), completed in FY 1999. Because of deficiencies in Army accounting procedures that were themselves being addressed, auditors could not verify the fund's accounts or otherwise assess its performance, beyond noting its record-keeping and control shortcomings. The Army could not account with certainty for its expenditures from the fund.

The Army Materiel Command made progress toward meeting the goals of the Defense Reform Initiative during FY 1999 despite such obstacles. Implementation of a Single Stock Fund (SSF) program promised to streamline purchasing and eliminate the inefficiencies of the WCF by merging its wholesale and retail elements into a single, nationally managed fund. Wholesale elements of the WCF furnish goods and equipment for further distribution, and retail elements provide them for consumption. Trial programs at Fort Sill (Oklahoma), Fort Lewis (Washington), and Redstone Arsenal (Alabama) during FY 1999 paved the way for full SSF implementation.

On 19 May, the SSF Executive Steering Committee recommended that certain items not managed by the Army be excluded from the SSF on the grounds that they are not supported by standard Army information systems supporting the reform. The AMC implemented the recommended changes within the Army Food Management System, Clothing Initial Issue Point System, Fuels Automated System, Integrated Facilities System, and Theater Army Medical Management Information System. Preparations for full SSF implementation went forward, with those exclusions, and included an AMC request for the future funding of a National Business Office to oversee its administration.

The FY99 transfer of major command retail divisions to AMC control placed responsibility for all Army retail activities under one command. This improved the AMC's ability to overhaul the Army supply system and implement the SSF program. But the scale of FY99 humanitarian

assistance missions strained the AMC's resources as it increased sales and obligations in some supply activities. The Army's successful attempt to seek funding for contingency and humanitarian operations through a supplemental budget request boosted wholesale (for further distribution) sales 11 percent above planned FY99 levels. Retail (end-user) sales rose through the same mechanism, ending the fiscal year at 2.7 percent over plan. This reduced the wholesale unit cost, or cost per dollar of sales, to \$0.97, one cent below the goal for the fiscal year. Sales volumes that were higher than anticipated and unexpected turn-ins raised retail cost to one cent above the \$1.00 goal. Despite these fluctuations, the AMC maintained the highest availability rate in the past three years, averaging 85.6 percent immediate availability of stocked items.

Other AMC programs included sustainment systems technical support, the Army mechanism to maintain and improve fielded weapons systems. The increasing age of major systems, combined with high operating tempos, strained resources in this area. For example, a shortfall in funding for contractor logistics support for fixed-wing aviation threatened to ground a portion of the Army's aircraft late in the year, mirroring the familiar problems in funding depot maintenance activities.

To correct such problems, in 1997 the Army instituted a process of transformation that it labeled the Revolution in Military Logistics (RML). During FY 1999, the RML continued as the Army moved toward a velocity-based logistics concept that would be responsive to the needs of the force across the full mission spectrum. Velocity-based logistics, developed in the private sector, replaces large and expensive warehouse stockpiles with a constant flow of goods from producer to end user regulated by the rate of consumption. While it enables the Army to meet the sustainment challenges of the National Military Strategy, the RML also addresses the growing demand for lift, or transportation, capacity. When the program is fully implemented, it will revise logistics throughout the force and enable the Army to meet its goal of deploying a medium-weight, brigade-size force anywhere in the world within ninety-six hours.

Toward that end, the Army expects the RML to create a single logistics system, promote distribution-based logistics, enable rapid force projection, create total asset visibility, establish a flexible infrastructure, and reduce the scale of the Army's logistical requirements (generally referred to as its "logistical footprint"). Those lofty goals are being met by applying information technology and advanced capabilities to the problems of acquisition, distribution, and management. The RML stands at the heart of the Army's efforts to balance readiness and modernization, maximizing the use of scarce resources. Those resources transcend budgetary limitations, to include production and transportation capacity, personnel, and facilities. In addition to the obvious economic benefits, the RML increases strategic

responsiveness, decreases deployment timelines, ensures joint force compatibility and support, creates an early-entry force able to operate without access to fixed forward bases, and reduces sustainment needs.

The Velocity Management (VM) program, which establishes velocity-based logistics throughout the Army as the core of the RML, is intended to decrease the Army's dependence on stockpiled supplies by relying instead on automation, speed, and transportation to meet its logistics requirements as quickly as commercial systems meet the needs of industry. As it neared full implementation within the Army National Guard, VM significantly improved the flow of repair parts and other items to Guard units in FY 1999. The program continued to identify and resolve delays in the ordering, procurement, shipping, and receipt of supplies as the total force expanded its implementation.

As a key contributor to VM, Army Total Asset Visibility (ATAV) is an operational capability that integrates information from numerous automated information systems to provide logisticians visibility of stocks in use, in storage, on hand, and in transit. Bar coding and radio frequency identification technologies assist the process by facilitating automated identification and tracking of individual items and containers. ATAV meets critical management needs to reduce duplicative procurement, meet mandated cost reductions, and provide logistics system efficiencies.

The Army designated ATAV as the single authoritative database to provide data to the Joint Total Asset Visibility initiative. ATAV provides logistics data to all military services and the Defense Logistics Agency. This information can be used to redistribute critical materiel to meet emerging requirements. ATAV was used to support Operation JOINT FORGE (Bosnia-Herzegovina) and Operations DESERT THUNDER and DESERT FOX (Kuwait) during FY 1999.

Automatic identification technology (AIT) supports ATAV through the electronic identification and tracking of items as they move through the logistics system from the factory to their final destination. The AIT equipment suite being fielded by the Army includes radio frequency identification, laser optical technology, smart cards, and bar coding. All of these new capabilities are designed to enable logisticians to monitor cargo movements, divert shipments, locate critical supplies, and reduce or eliminate human error.

The Army installed radio frequency identification (RFID) equipment at fifteen continental U.S. installations designated as power-projection platforms in FY 1999 to provide theater commanders with information on cargo in transit. This effort began in July 1998 to support deployment of the 1st Cavalry Division to Bosnia. RFID equipment was used during FY 1999 to track Patriot missile equipment moving to Kuwait for Operation DESERT THUNDER and again for equipment moving to Kuwait for Operation DESERT FOX.

To meet the current needs of rapid deployment and sustainment, the Army maintains stocks of pre-positioned equipment at various locations, including some afloat. One of the seven pre-positioned armor-heavy brigade sets remains aboard fifteen Navy-operated vessels, including new large, medium-speed, roll-on/roll-off (RORO) ships. Three of the other brigade sets are in Europe (Italy, Luxembourg, and the Netherlands), and the remaining three are in Kuwait, Qatar, and South Korea. Additional support-unit equipment, mission-specific packages, and resupply sets are maintained afloat or ashore at overseas or continental U.S. facilities. These practices enable a unit to fly rapidly from the United States, draw heavy equipment from pre-positioned stock, and deploy on a mission without waiting for its equipment to arrive by ship or air from the continental United States. Pre-assembled resupply sets and mission-specific packages then simplify sustainment and theater development.

RORO ships are an invaluable component in the United States' ability to deploy heavy equipment overseas. These vessels are equipped with ramps that make it possible to swiftly load or unload vehicles and cargo with a minimum of shore support. They are, therefore, uniquely suited to deploying the Army's heavy forces, and in conjunction with the Air Force's C-17 and C-5 cargo aircraft, they play a key role in sustaining joint operations overseas. The Army maintains a keen interest in these three systems and the nation's overall airlift and sealift capabilities.

The 1995 Mobility Requirements Study Bottom-Up Review Update identified the Army's sealift requirements to meet the goal of deploying a five and one-third division force package within seventy-five days. Doing so will require nineteen large, medium-speed ROROs (LMSRs), thirty-one smaller ROROs, eight fast sealift ships, six crane ships, two heavy lift pre-positioning ships, three lighter aboard ships, and two container ships. Five LMSRs converted from more traditional freighters are already in service, two of them deployed with pre-positioned stocks. At the end of FY 1999, six purpose-built LMSRs had been delivered, with nine more to follow. The program calls for nine of those vessels to support the afloat pre-positioning program, one for the Marine Corps and eight for the Army, with the rest assigned to the Navy's surge sealift program.

During FY 1999, Army logisticians experimented with a new procedure to capitalize on the streamlining and automation initiatives that constitute the RML. Anticipating that RML reforms and budget restraints will inevitably reduce authorized stockage lists, planners developed a means to meet a unit's additional stock requirements as it mobilizes for contingency deployment. The Deployment Stock Package—an automated process that improves stock visibility, supports planning, and provides real-time adjustment capabilities—can significantly improve the supply performance and readiness of a deploying unit. After successful testing

during unit rotation at the National Training Center, the Deployment Stock Package entered service with units at Fort Stewart (Georgia), Fort Lewis (Washington), Fort Campbell (Kentucky), Fort Carson (Colorado), and, at the end of the fiscal year, in Kuwait. The program is being expanded to expedite corps and theater operations and to create a national-level visibility for deployment stock requirements.

Maintenance

Army depot facilities in the active and reserve components maintain and, when necessary, rebuild or upgrade the Army's heavy equipment. Although they had increased, the levels of full-time support personnel at reserve-component depots continued to fall short of the Army's need in FY 1999. Assets and parts availability hampered depot activities in both the active and reserve components, but corrective measures to increase coordination among workloads, workload schedules, and asset and repair parts requirements reduced the problem as the year progressed. Customer commands, units or organizations requiring depot services, placed orders earlier and so permitted the depots to requisition items requiring lead times earlier in the fiscal year. This ensured their availability or allowed schedules to be adjusted to correspond to delivery dates.

At the beginning of the fiscal year, commands responsible for specific commodities assumed management responsibility for the relevant depots, another step in improving depot efficiency. Thus the Army Communications-Electronics Command assumed command and control of the Tobyhanna Army Depot (Pennsylvania). Similarly, Army Tank-Automotive and Armaments Command took operational control of the Anniston (Alabama) and Red River (Texarkana, Texas) depots, and Aviation and Missile Command assumed control of the Corpus Christi (Texas) and Letterkenny (Chambersburg, Pennsylvania) depots.

Fiscal performance of the Army's depots is assessed in five categories: cost per direct labor hour, financial operating measures, customer revenue rate, capital investment, and cash management. FY99 figures for direct labor, operating measures, customer revenue, and cash management all reflected positive trends.

In the case of capital investment, establishing the positive trend involved several major projects to maintain and improve depot capabilities by acquiring new equipment and completing minor construction projects. The automated storage and retrieval warehouse system for bulky materiel used in fabrication and overhaul activities that consists of man-aboard lift vehicles, automated guided vehicles, and miniature load controllers began replacing a similar but obsolete system. The Army Workload and Performance System, a networked personal computer software suite

that integrates existing production and financial data, started helping production and resource managers optimize their resources and activities. The Standard Depot System/Manufacturing Resources Program, another software application, began making the Depot Maintenance System compliant with the Defense Information Infrastructure and Joint Technical Architecture. When fully implemented, the Standard Depot System/Common Operating Environment that entered service during the year will create a common user interface across the AMC, reduce the number of unique applications in use, and enable AMC personnel to perform all functions from a single workstation.

Combining functions into a single organizing framework, as Army depots did through those software initiatives in FY 1999, is a recurring theme in improving Army logistics. Integrated Sustainment Maintenance (ISM) currently combines the general support maintenance activities of Forces Command, Training and Doctrine Command, and the reserve components into a single resource pool. The facilities within that pool compete for work, minimizing repair costs and maximizing the Army's overall maintenance efficiency. ISM currently operates on a "repair-and-return-to-user" premise. This means that when a unit sends a particular piece of equipment in for depot maintenance, the unit will receive that same piece back when the required repairs, upgrades, and preventive procedures have been completed. Because the Army has no maintenance float, or fleet of available short-term replacement equipment, the unit is without that piece of equipment for the duration of its depot overhaul. The absence of such equipment can become a significant readiness issue even with the FY99 reductions in depot maintenance backlogs. The SSF program, once fully implemented, will replace this system with one of repairing for return to the supply system.

The high operating tempo of FY 1999 led to speculation that supply and maintenance would suffer, adversely affecting training and long-term readiness. Although the threats posed by aging equipment, heavy use, delayed maintenance, and parts or funding shortages were quite real, the Army met the challenge. Programs like VM helped in meeting the Army's maintenance needs and they promise to do more. But preserving the Army's long-term ability to maintain deployed equipment and personnel, or to sustain a high operating tempo without degradation in mission capabilities, is a problem quite different from routine maintenance.

Sustainability

When the Army deploys away from its permanent bases or otherwise employs its equipment in nontraining missions, its need for logistical support, and the difficulties in providing that support, increase dramatically.

The challenge grows with the scale and duration of an operation and with its distance from established support facilities. Sustaining Army forces under such circumstances requires prior planning and a complex logistics system.

Equipment readiness is one measure of that system's effectiveness. Despite high operating tempos, the Army met most of its readiness goals in FY 1999. The Army uses the mission readiness rates of its sixteen major weapons systems as an indicator of equipment readiness trends, and only two of those systems—the CH-47D helicopter and the heavy expanded-mobility tactical truck—failed to meet readiness standards. The entire CH-47 fleet (446 aircraft designated CH-47D, MH-47D, and MH-47E) spent part of FY 1999 grounded after a scheduled overhaul of one helicopter revealed cracked transmission gears. The Army's general success in mitigating the adverse impact of aging equipment, high usage rates, and maintenance backlogs is apparent in the overall adequate readiness levels of the last three fiscal years.

Some of the Army's major weapons systems experienced minor declines in readiness during FY 1999, although still achieving readiness goals. The declines may be attributed to limited assets, parts supply problems, and changing customer orders at the Army depots. Schedule conformation reports, which calculated the percentage of major systems repairs or overhauls completed on schedule, indicated a substantial decrease in meeting depot maintenance schedules during the fiscal year.

Problems in the delivery of required parts and supplies are a potential source of decreased readiness and difficulties in sustaining a deployed force. The VM program is intended to speed the flow of those materials and prevent unnecessary delays. Although its performance fell short of the ambitious goals set for FY 1999, VM proved effective in reducing the time between ordering and receipt of supply items in three priority groups, measured against the FY95 baseline. Such success would not be possible without support by other components of the logistics system. Although parts and supplies pass through the Army's logistics system with dramatically increased speed as a result of VM and other components of the RML, the Supply Management Activity has maintained the availability of increasingly transient items in its role as the purchaser and warehouse agent for stocks sold to Army operating units.

Securing and transporting required materiel in a timely and cost-effective manner is crucial to maintaining the Army's ability to sustain even routine operations, a fact that the Army Medical Command (MEDCOM) addressed with a program to standardize its needs, reduce the variety of required supplies, and realize volume savings on the resultant contracts. North Atlantic Regional Medical Command began with an effort to standardize sixteen product categories in 1998. The MEDCOM

subsequently expanded that regional effort into a broader medical/surgical standardization program.

By early 1999, the regional medical commands (RMCs) started reporting success in standardizing the sixteen categories originally examined by the North Atlantic RMC. Based on varying clinical and business practices in the RMCs, the MEDCOM developed a second informal list of categories for standardization. At the same time, the Department of Veterans Affairs provided the MEDCOM with contract access to sixteen hundred standardized medical/surgical items. To facilitate the standardization process, a Defense Supply Center Philadelphia/lead agent partnership hired contractors to staff regional business improvement cells. The MEDCOM business cell staff subsequently analyzed patient databases to develop a clinical workload-driven list of forty-two standardization categories. Items in those categories were to be considered for possible standardization throughout the Department of Defense in FY 2000. These efforts saved the Army \$3 million on medical and surgical items by the end of FY 1999. The program also reduced the total volume of the MEDCOM's supply needs, thereby improving the sustainability of Army medical units.

Efforts to maintain and improve the Army's ability to sustain its operations range from the seemingly simple, such as standardizing medical supply categories, to the highly complex. The Army relies on maritime transportation for the bulk supplies and heavy equipment that deployed forces require. But port facilities are not always available when and where the Army needs them. Part of the Army's afloat pre-positioned equipment program includes a port-opening package embarked aboard the vessels *American Cormorant*, *Strong Virginian*, and *Gopher State*. The vessels carry enough equipment to turn a bare beach into a functioning port facility capable of supporting Army logistics over-the-shore operations.

The equipment aboard these vessels requires periodic maintenance and repair. Every two years the ships are offloaded, and their cargo of tugboats, landing craft, barges, floating cranes, and other equipment is overhauled and returned to service. This procedure, and the subsequent maintenance, are carried out at the U.S. Army Equipment Base, North Atlantic, in Hythe, England. *Strong Virginian* underwent the process for the first time in November 1998. The ship uses its heavy-lift cranes to deploy four LCU-2000 utility landing craft and a modified LCM-8 command-and-control landing craft. Its roll-on/roll-off configuration enables *Strong Virginian* to store and transport 168 motorized vehicles, mostly high-mobility multipurpose wheeled vehicles and trucks, below deck.

The Hythe shipyard—the only facility of its kind—maintains the Army's forward-deployed watercraft and other seaborne assets, such as those aboard the *Strong Virginian*, in a small corner of the port of Southampton. Its mission includes materiel and maintenance support for

thirteen additional pre-positioned equipment ships and maintenance of smaller vessels such as the one hundred-foot Army tugboat it converted to carry firefighting equipment for the Military Traffic Management Command in the spring of 1999. That conversion was the first of three that the Hythe shipyard will soon complete to enhance the Army's firefighting capability. The facility and the 270 watercraft it supports are an important component in the Army's ability to conduct and sustain remote operations.

The Army initiated an ambitious restructuring of its watercraft fleet in FY 1999. The 270 landing craft, tugboats, floating cranes, barges, causeway systems, and utility craft maintained at Hythe were being upgraded and restructured in compliance with warfighting requirement timelines. When complete, the program will create a globally responsive, modern, forward-positioned fleet capable of sustaining over-the-shore operations in sea state 3 (waves three to five feet high) anywhere in the world.

The Army's ability to handle cargo at both sea and aerial port facilities is becoming ever more important as units increasingly deploy to remote locations on contingency and humanitarian missions. Although ships remain important, Force XXI and the Army After Next will feature reduced heavy-lift needs and smaller logistical requirements. Air cargo delivery, already vital, will become increasingly important in Army logistics. Units once primarily responsible for unloading and loading ships now handle aircraft and rail transit as well.

With that in mind, the Army's stevedore units, officially designated terminal-service companies, have been redesignated as cargo-transfer companies. The shifting nature of that community's mission was acknowledged in FY 1999 when the name of the annual Master Stevedore Rodeo, intended to recognize and promote mastery of cargo-handling skills, changed to the Master Cargo Handler Rodeo. This minor change in nomenclature reflects the social transitions that accompany the growing complexity of the Army's logistic operations.

Security Assistance

The Army provides security assistance to allied and friendly nations in the form of foreign military sales, training, and education. Security assistance supports the Army mission by promoting U.S. foreign and defense policy and helping other countries develop or maintain their own defensive capabilities. These efforts support regional and global stability, reduce the likelihood of direct U.S. involvement in contingency or peace enforcement missions, and increase the capabilities of current or potential coalition and alliance partners and their interoperability with U.S. forces. As an added benefit, security assistance helps maintain the defense industrial base and reduce the cost of weapons systems and other materiel.

Such activities are administered by the deputy under secretary of the Army for international affairs (DUSA-IA) in accordance with the August 1997 revision of General Order 10 that reorganized the Army secretariat. The Office of the DUSA-IA made substantial progress in regularizing its activities and updating relevant Army regulations during FY 1999. For example, its Security Assistance Division updated AR 12-1, *Security Assistance and International Logistics Support Policy and Responsibilities*, and AR 1-75, *Administrative and Logistical Support of Overseas Security Assistance Organizations*. The new version of AR 12-1 incorporates the provisions of General Order 10 that delegated responsibility for the Army's international affairs functions to the DUSA-IA. Circulation of the new regulations solidified the DUSA-IA's authority over the conduct of such functions.

The promulgation of the Army's policies for exporting weapons systems to friendly foreign governments holds an important position among the international affairs functions of the DUSA-IA. In FY 1999, the DUSA-IA released policies defining the configurations and capabilities of several systems approved for export. These systems included the Javelin missile, the Suite of Integrated Radio Frequency Countermeasures, M56/58 Smoke Generator, AH-64D Apache, Suite of Integrated Infrared Countermeasures, and Patriot Advanced Capability-3 missile system. The DUSA-IA also represented the Army in the Arms Transfer Policy Review Group (ATPRG) that the deputy secretary of defense established in FY 1999 to evaluate the arms-transfer process. In its first year of operation, the ATPRG examined the sale of the AH-64D to Kuwait and Singapore, foreign participation in development of the Joint Strike Fighter, transfer of the HARM antiradar missile system to Egypt, and an Arms Transfer Decision Framework to govern future decision making.

The DUSA-IA led the development of the Army's own decision support system for formulating positions on the transfer of Army property and classified technologies to foreign governments. Work on the creation of that system, a relational database of technology transfer policies, data, and actions, continued throughout FY 1999. When complete, the system will streamline the analysis, review, and processing of requests to transfer classified data, systems, and ordnance to foreign nations. The Air Force and the Navy recognized the value of such a system and adopted that of the Army, thereby consolidating government records into one emerging integrated system.

Such international transfers can actually save the Army money. By releasing excess defense articles (EDAs) to foreign military forces, the Army can reduce inventory and avoid the cost of disposing of surplus goods. The EDA release process has become quite slow, often requiring more than a year between offering an item to a friendly nation and actually delivering

it, absent an urgent political need. In FY 1999, the Army recommended EDA allocations to thirty-one countries, with a value of \$1.14 billion. Substantially less equipment was actually transferred. Deliveries to six nations, worth approximately \$158 million, were completed. Another \$22 million worth of equipment was rejected by eight countries because of its poor condition or because the recipient government lacked funds to pay for repairs and shipping. Much of the Army's foreign security assistance takes the form of training. In FY 1999, the Army provided instruction for 7,623 international students from 142 countries. The Army deployed 273 training teams, totaling 562 personnel, on overseas instructional assistance missions. Despite the size of that effort and the activities of other training centers, the United States Army School of the Americas (USARSA), housed at Fort Benning, Georgia, remained the Army's premier venue for delivering training through its security assistance program. Title 10, U.S. Code, Section 4415 charges the Army, through the USARSA, to develop and conduct professional military education using the Spanish language for the military personnel of Central America, South America, and the Caribbean region. In FY 1991, section 541 of the Foreign Assistance Act established an Expanded International Military Education and Training (EIMET) authority that allowed the USARSA to accept civilian personnel and police officers. Under that authority, civilians professionally involved with military matters could receive training from the USARSA or other U.S. military sources in four areas: defense resource management, civilian control of the military, cooperation between law enforcement and military agencies, and military justice systems and human rights.

During FY 1999, public and media attention focused on continuing allegations of human rights violations by graduates of the USARSA and of the USARSA's role in promoting those alleged violations. After examining the accusations and the USARSA's record, the Army leadership issued a strong endorsement of the program. But the unsubstantiated claims that the USARSA promoted human rights violations, and subsequent public outrage, caused the House of Representatives to include a measure in the FY00 Foreign Operations Appropriations Act prohibiting security assistance funds from being used at the USARSA—a move that effectively would have closed the school. A conference resolution restored the funds but required, before they could be spent, that the secretary of defense certify that instruction and training at the facility were consistent with training and doctrine (particularly in human rights) provided at other defense department institutions that trained primarily U.S. military personnel.

Since 1993, a number of legislators have supported efforts to close the USARSA in response to its alleged role in promoting human rights abuses. In FY 1999, Massachusetts congressman Joseph J. Moakley and Illinois senator Richard C. Durbin introduced bills to repeal the school's statutory

authorization. Army leaders responded with an education and information campaign intended to counter the school's negative image. As the fiscal year approached its end, the secretary of the Army directed the DUSA-IA to develop a long-term strategy to ensure the school's continued viability. The August 1999 Report of the Board of Visitors, an external committee responsible for reviewing the USARSA's academic program, noted the exemplary nature of the school's human rights training.

FY 1999 was a busy year for international cooperative research and development projects. The DUSA-IA's Cooperative Research, Development, and Acquisition Division established fourteen project agreements and eleven data exchange agreements, arranged four loans, and pursued eighteen additional proposals in those categories. Such activities provide the Army with different perspectives and lines of research that it cannot pursue alone and they strengthen ties between the United States and other nations.

Ties between the Russian Federation Army and the U.S. Army weakened in FY 1999 in response to North Atlantic Treaty Organization (NATO) operations in Serbia. As one example, the Russian procurator general had settled on the U.S. Uniform Code of Military Justice as the best available model for reforming the Russian military justice system. The Office of the DUSA-IA strongly supported the Russian interest, seeing a means to support Russian development of improved democratic rule of law in military affairs. Unfortunately, the strained relations postponed a scheduled visit to the United States by the Russian Main Procuracy to discuss the reform.

Relations with the Chinese People's Liberation Army suffered a similar setback. A May 1999 China Engagement Workshop hosted by the DUSA-IA developed a schedule of exchange events, including a visit to China by the superintendent of the United States Military Academy, a language exchange visit by Academy cadets, and a possible military history exchange. Planning came to a halt, and all military ties with China were severed, as a result of the 7 May accidental U.S. bombing of the Embassy of the People's Republic of China in Belgrade during NATO air strikes targeted against the Yugoslavian government.

In accordance with the 1997 Defense Reform Initiative, the international emergency planning function of the Office of the Secretary of Defense transferred to the Army. The DUSA-IA assumed responsibility for the function—known as civil-military emergency planning (CMEP)—on 11 March 1999, and executed its first CMEP event in September 1999. The Earthquake Preparedness Workshop for Southeastern Europe Defense Ministerial (SEDM) nations met in Varna, Bulgaria, to discuss database development and communications needs in planning for shared response to major earthquakes. In a concurrent session within the SEDM, the

five Partnership for Peace (PFP) members discussed sustained regional cooperation in civil protection. The PFP is a program that promotes practical security cooperation between NATO and former Warsaw Pact nations. Bulgaria introduced a proposal to establish a CMEP Council for the five PFP and three NATO nations of the SEDM.

Research, Development, and Acquisition

The reconfiguration of the Army from the Cold War force, through Force XXI, to the Army After Next is partly a response to the technology-driven revolution in military affairs. To fully exploit the capabilities that digital information technologies, advanced materials, and parallel changes in business and operational practices offer, the Army continues to invest heavily in the development and production of new systems and the revision of old policies.

A sample of the potential this process offers may be found in two comparatively small, complementary programs: the Army fuel privatization/outsourcing initiative and the procurement of alternative-fueled vehicles under the Army energy program. In November 1998, the Army replaced thirteen government-owned and -operated fuel facilities at Fort Bragg, North Carolina, with two contractor-owned and -operated facilities. In February 1999, a single privately owned and operated facility replaced the government fuel facilities at Schofield Barracks, Hawaii. Those two contracts will save the Army an estimated \$3 million over a twenty-year period. Seventeen other Army facilities are under consideration for this program, which reduces government-owned infrastructure and associated personnel costs while maintaining a vital support activity.

During FY 1999, the Army's alternative-fueled vehicle (AFV) program, involving energy sources such as propane, liquid natural gas, and electricity, accounted for 32 percent of all acquired or leased general service vehicles. Although still short of the 75 percent goal of the Energy Policy Act, the 1,365 AFVs in service decrease the Army's thirst for petroleum products and help meet environmental goals. In conjunction with fuel privatization, AFVs offer the potential to significantly alter transportation on Army facilities without requiring extensive government investment in alternative fuel infrastructure.

But alternative fuels and environmental protection are only two aspects of the Army's ongoing efforts to develop and procure more effective and efficient systems to facilitate its mission. During FY 1999, the Army ordered the reorganization of the offices responsible for those efforts. On 18 November 1998, the vice chief of staff approved the 1 October 1999 consolidation of Army developmental and operational testing under a single command, the preexisting Army Operational Test and Evaluation

Command (OPTEC). That command's name was slated to change to Army Test and Evaluation Command when the consolidation occurred.

Army research and development did not halt to await the restructuring scheduled for the first day of FY 2000. The OPTEC, originally formed as an independent Army agency, pursued an extensive list of projects during FY 1999 in cooperation with other Army agencies and civilian contractors. Those projects were guided by the Army Development, Acquisition, and Fielding Strategy (DAFS), a 1999 statement supporting the Army Science and Technology Master Plan and the Army Modernization Plan. In accordance with the DAFS, the Army is moving away from the traditional "stovepipe" model of linear research, development, and acquisition of individual systems to a system-of-systems approach. That concept recognizes every piece of equipment, soldier, and system as part of a larger system for performing the Army mission. It stresses integration, cooperative development, and component commonality. Spiral development, in which the combat developer, materiel developer, contractor, and warfighter work closely to advance a project from requirements, through design, to implementation and testing, complements this system-of-systems approach to speed the process and ensure its focus on the warfighter's needs.

New Army systems, in accordance with the DAFS and Army practice, advance through four phases in the development, acquisition, and fielding process. The first phase, concept exploration, marks the transition between basic research and systems development. It consists of competitive, parallel, short-term studies to define and evaluate alternative concepts. In the program definition and risk-reduction phase, programs are identified as specific concepts and approaches. Alternatives are assessed and risks identified. During the engineering and manufacturing development phase, the most promising approach is translated into a stable, interoperable, producible, supportable, and cost-effective design. Manufacturing processes are validated, and the system's capabilities are tested to identify necessary fixes or upgrades. In the final phase—production, fielding/deployment, and operational support—the system achieves operational status, fulfilling mission requirements. Remaining difficulties are identified and resolved, and systems in this phase retain the potential for further development.

The Army's publication *Weapons Systems 1999* identifies ongoing projects within those four phases. It also links systems with the relevant pattern(s) of operation defined in Army Vision 2010. Those patterns provide a template for Army development and identify the role that specific systems will play in the overall system of systems. The patterns of operation are these: project the force, protect the force, gain information dominance, shape the battlespace, conduct decisive operations, and sustain the force. Specific projects however, may be better understood in the broader mission

categories of information dominance, force overmatch, essential research, recapitalization, and contributing capabilities.

The Army pursued a number of projects intended to enhance information dominance in FY 1999. Many of those programs were already in the production, fielding/deployment, and operational support phase of development. These included the Advanced Field Artillery Tactical Data System, Analysis and Control Team Enclave, Army Airborne Command and Control System, Army Key Management System, and the Digital Topographic Support System. These systems, and those in the engineering and manufacturing development and other phases (like the Force XXI Battle Command Brigade-and-Below system) collect, process, and disseminate information on the digital battlefield.

Such systems are part of the infrastructure of the Army Battle Command System (ABCS), the overall concept for a system of systems integrating information from various platforms and sensors. Their continued development in FY 1999 supports the emergence of the ABCS as an operational reality. As it nears full functionality, the ABCS will link automation assets, communications media, and operational forces to support the Army's command, control, communications, and intelligence capabilities in real time. The potential impact of such a rapid, integrated flow of communications, enabled by information technology, is the driving force behind the Revolution in Military Affairs.

Knowing where and how to employ force does little good if the Army lacks the fire power and robustness to accomplish its mission. The Army avoids this obvious pitfall by maintaining force overmatch—the combination of lethal, mobile, and survivable weapons systems that enables its units to seize and exploit the advantage provided by information dominance. Most of the high-profile systems under development during FY 1999 fell under this general category. But the dividing line between information dominance and force overmatch is not entirely clear because the two mission categories interact closely and frequently coexist within the same unit or piece of equipment.

This ambiguity in mission categorization is embodied in the RAH-66 Comanche helicopter, which remained in the program definition and risk-reduction phase during FY 1999. The Comanche, as a stealthy armed reconnaissance helicopter, contributes to both information dominance and force overmatch. Its digital information suite will facilitate communications among flight crews, Joint Surveillance and Target Attack Radar System aircraft, and other ground-based and airborne weapons platforms and command-and-control facilities. Advanced electro-optical sensors and target recognition capabilities will allow the Comanche to add information to the battlespace network. And its low radar signature and armament of air-to-ground missiles and rockets, air-to-air missiles, and 20-mm cannon

enable the Comanche to exploit that information on deep, precision-strike missions as a potent ingredient in force overmatch.

The first Comanche prototype returned to the skies in late October 1998 after the installation of various improvements. The second prototype completed its first flight test on 30 March, and both aircraft continued to operate throughout the year. The testing proved successful enough that the Boeing Sikorsky RAH-66 Comanche Joint Program Office delivered a \$3.1 billion proposal to the Army on 23 August. The proposal recommended the construction of thirteen more RAH-66 helicopters for continued Army testing and evaluation and the initiation of the engineering and development phase of the Comanche program in early 2000.

Crusader, like Comanche, was in the program definition and risk-reduction phase during FY 1999 as a program contributing to the Army's ability to overmatch an opposing force. As the premier indirect fire support system of Force XXI, the Crusader is a notable advance over the M109A6 Paladin and M992 ammunition supply vehicle combination it will replace. Improvements include extending the new howitzer's radius of fire more than ten kilometers beyond the Paladin's thirty-kilometer maximum, a sustained rate of fire of ten to twelve rounds per minute compared to the Paladin's one round per minute sustained rate or three-minute burst of four rounds per minute, and the ability to launch a simultaneous impact strike of four to eight rounds with a single gun. The new 155-mm howitzer also offers automated ammunition handling, automatic resupply and refueling from the system's integral support vehicle, and a remote multioption fuze capability, all improvements over the older system. A Crusader's three-man crew is one person smaller than the Paladin's and, as a result of the range and rate-of-fire improvements, it commands combat power surpassing that of three of the older Paladin artillery pieces combined.

A March 1998 in-process review determined that the Crusader program was ready to proceed from the design stage into the construction of initial prototypes. The prototypes were to be delivered in December 1999, but in the FY99 Defense Authorization Act the legislature withheld funding for the Crusader until five critical issues could be resolved. The Army responded to those concerns in a February 1999 report that asserted the new system would be the first American 155-mm howitzer since the First World War that could claim superiority over other self-propelled 155-mm systems. The Crusader, clearly a revolution in tactical artillery systems, would fill an urgent requirement, provide critical support for the Army and Joint Vision 2010, deliver an optimum blend of cost and performance, and satisfy the requirements of the Force XXI campaign. With those concerns resolved, the program continued, but it remained behind schedule for the rest of the fiscal year.

In addition to programs providing information dominance and force overmatch in the near to mid-term, the Army supports essential research and development projects seeking both incremental improvements in existing systems and leap-ahead technologies. Careful management of the service's limited science and technology funding is vital to the success of these efforts, which also seek to leverage the advances of other services, government agencies, industry, and academia. Funding for these programs is guided by a set of more than two hundred science and technology objectives that establish specific, measurable advances to be achieved in each fiscal year.

The Brilliant Antiarmor submunition (BAT) and the Tactical High-Energy Laser (THEL), which were in the engineering and manufacturing development stage that immediately precedes production, were among the most mature research projects the Army pursued during FY 1999. The BAT submunition completed production qualification and received approval for initial production before the end of the fiscal year, while design and testing of its first scheduled product improvement upgrade continued. The upgrade will possess improved target acquisition capabilities, adding millimeter-wavelength radar to the acoustic and infrared seekers of the original BAT submunition, and will feature an enhanced warhead. The THEL, a cooperative project of the DOD and the Israeli ministry of defense, is intended to provide local and theater-level protection from short-range artillery rockets. With the Space and Missile Defense Command as its U.S. executive agent, the THEL successfully demonstrated its target identification and tracking capabilities and achieved "first light"—the first firing of its weapon-strength laser—during FY 1999. On 7 July, the Joint Requirements Oversight Council approved the Joint Theater Air and Missile Defense Mission Needs Statement, identifying the need for the capabilities that the THEL, as an advanced-concept technology demonstration project, promises to develop.

Such efforts to develop future systems and technologies cannot ignore the need to adapt and improve existing Army systems to maximize their capabilities and extend their useful operational life spans. Identifying such potential developments is part of the Army's research and development strategy. Overhauling, updating, and modifying existing equipment is the purpose of the Army's recapitalization effort.

The Army recapitalized a number of systems during FY 1999. For example, during the second quarter of FY 1999, managers of the high-mobility multipurpose wheeled vehicle program completed their analysis of alternatives, the basis of the strategy that will guide the program's modernization efforts through FY 2023. The product manager of the M113 family of vehicles derived from the basic armored personnel carrier continued to purchase upgrade kits to convert older variants of the tracked

vehicle into new configurations, completing 230 such modifications during the fiscal year. Full-rate production of the M109A6 model of the Paladin self-propelled howitzer ended on 25 June, whereas the Army continued to pursue upgrades such as the Automatic Fire-Control System XXI to increase the weapon's capabilities. National Guard artillery battalions in New Mexico, South Carolina, Utah, West Virginia, and Wisconsin received the howitzer during FY 1999 as the Army continued to upgrade the existing M109A2/A3 Paladins to the M109A5 model.

Finally, the Army also develops and acquires capabilities that support the patterns of operation identified in Army Vision 2010 but do not fit into any of the clearly definable patterns of operation. Such systems fall into the general mission category of contributing capabilities. They improve the mobility and lethality of Army forces, enhance their survivability, or otherwise promote their mission performance.

During FY 1999, those projects included continuing research into the environmental restoration of Army facilities and tele-engineering, the Army Corps of Engineers' initiative to support deployed engineers by providing them with the capability to teleconference with, and otherwise draw on, the knowledge and capabilities of subject matter experts located elsewhere. Army medical researchers continued development of the fibrin bandage in conjunction with the American Red Cross, and contracted to the University of Cincinnati (Ohio) the development of a means for extending the shelf-life of blood stores. The first project will save lives by including a clotting agent in bandages, and the second will enhance the Army's ability to maintain blood supplies in remote locations.

Through such research, development, and procurement programs the Army maintains its current and future ability to fulfill its mission under the National Military Strategy. Army logisticians manage the flow of goods and services to the active and reserve components; provide for the maintenance of equipment and facilities; sustain Army forces in the field; assist friendly nations with their security and emergency response requirements; and direct the Army's research, development, and acquisition programs. They provide Army personnel with the supplies and tools required to put doctrine and training into practice.

7

Support Services

The Army's mission performance ultimately depends on its ability to train, equip, and maintain soldiers. In turn, the need to maintain soldiers requires the Army to address their individual needs. Physical and emotional health, pride and job satisfaction, and intellectual and personal growth are important factors in maintaining both the short- and long-term effectiveness of Army personnel. Such needs address the basic human desire for an acceptable quality of life. Failure to meet those needs would reduce the appeal of military service to both current and potential soldiers, with all that such a reduction implies for the Army's ability to maintain force readiness in the face of an accelerating operating tempo. The Army supports its mission capabilities by offering a number of programs to meet the needs, and improve the quality of life, of individual soldiers.

Morale, Welfare, and Recreation

The Army recognizes quality-of-life issues as a high-priority concern, addressed in part by Morale, Welfare, and Recreation (MWR) programs. Administered by the Army Community and Family Support Center, MWR programs provide a variety of recreational activities, community events, personal enrichment opportunities, and family support functions. Those programs are provided through MWR facilities located on Army posts. MWR personnel operate fitness centers, libraries, indoor and outdoor recreation centers, arts and crafts centers, automotive skills facilities, and entertainment and leisure travel programs on Army installations around the world. Surveys indicate that the most popular MWR offerings, such as fitness centers, are used by more than half of all eligible military personnel. The majority of MWR programs enjoy the participation of more than 30 percent of all eligible personnel. The semiannual Sample Survey of Military Personnel conducted in the spring and fall of 1998 indicated that the quality and availability of such programs ranked among the ten most popular aspects of military life.

Two of the three major concerns for both MWR and its subordinate family programs in FY 1999 were securing the exemption of key activities

from ongoing A-76 Commercial Activities studies, which explore the possible privatization of Army activities in compliance with the Federal Activities Inventory Reform Act of 1998, and the creation of baseline operational standards for each program to identify required resources. The assistant secretary of the Army (manpower and reserve affairs) complied with the October 1998 recommendation of the MWR board of directors to exempt sports and fitness, child and youth services, and several other categories of MWR activities from possible privatization under the A-76 process. This decision maintained the integrity of MWR programs and the workforce's depth and flexibility. MWR leaders met their second major concern for FY 1999 by developing baseline operating standards for core programs, including sports and fitness, child and youth services, Army community service, recreation, and libraries. Those standards established requirements for future budget cycles. MWR also supported stabilized funding for base operations (BASOPS) as its third major goal for the year. Continued shortfalls in the BASOPS maintenance and repair accounts that fund the required upkeep of facilities on Army installations often leave commanders little choice but to divert funds from the accounts intended to support MWR functions on the grounds that properly maintained facilities contribute to good morale.

Despite the reallocation of funds to BASOPS accounts, MWR activities executed almost 99 percent, or \$182.5 million, of their authorized \$185 million FY99 budget. Family programs, operating from separate accounts, suffered greater diversions and were able to execute only 95 percent of their \$203.2 million budget. Army community service activities stood out from the rest of the family programs, however, by spending 101 percent of their allocated \$40.5 million as a result of funds that local commanders diverted from other areas.

MWR's recreation programs began full implementation of the Recreation Delivery System in FY 1999. This new administrative approach includes the accreditation of all community recreation programs by the Commission for Accreditation of Park and Recreation Agencies, an independent commission that establishes firm standards for personnel, training, programming, equipment, and facilities. MWR's internal standards seek to exceed those required for accreditation, with the goal of guaranteeing standard levels of exceptional service throughout the Army.

Soldiers' needs for off-duty recreation, morale programs, and welfare services are not overlooked while they are on deployment. As FY 1999 drew to a close, thirty-eight MWR professionals provided United Services Organization entertainment programs, recreational activities, and special events to Army personnel at nine sites in Bosnia and Kosovo. A number of family programs also continued to address the needs of soldiers approaching, on, or completing deployment during

the fiscal year. These programs included Family Readiness Groups, the Army Family Teambuilding Program, and the Army Family Action Plan. Each of those programs seeks to improve the quality of life for Army personnel and their dependents, focusing on problem areas identified through previous experience.

Health and Medical Programs

The Army Medical Department (AMEDD) is responsible for the Army's health needs. This is a complex task, combining medical research, field medicine, and routine health care. In each of those areas, the AMEDD applies the latest business, technological, and scientific advances to preserve the force, meet the emerging needs of Force XXI, and develop future capabilities.

In FY 1999, the special appropriation for the Army Medical Research and Materiel Command totaled \$367.4 million, the highest research and development funding for Army medicine in more than a decade. Those funds supported research with potential benefits far beyond the Army but often in short supply. For example, the Army Center for Health Promotion and Preventive Medicine has been pursuing research into Lyme disease and other tick-borne pathogens since FY 1992. In that year, the Department of Defense (DOD) Authorization Bill approved \$850,000 to support the Army's role as executive agent for the DOD Lyme Disease Program. The FY92 Appropriations Bill, however, did not fund the program. Actual research could not begin until the FY94 budget authorized the diversion of \$850,000 from elsewhere in the Army Medical Research and Materiel Command budget. Supplemental funds the following year included \$500,000 in dedicated funding, but the research effort received no further support until FY 1999. The Army Center for Health Promotion and Preventive Medicine \secured \$1.5 million of the FY99 allocation to combat the debilitating illness by improving detection capabilities, conducting epidemiological studies, and creating a field detection test kit.

AMEDD research and development efforts generally parallel those of the civilian medical community, but the Army's special requirements guarantee it a unique role in the pursuit of some capabilities. The need to provide medical support in remote locations, for example, has encouraged the Army to pursue telemedicine's potential to link patients and local medical personnel with distant medical experts through advanced information systems. The Armed Services Biomedical Research Evaluation and Management Committee and the director of research and engineering approved the criteria of the Joint Science and Technology Plan for Telemedicine on 1 October 1997. Since that time, the Army has pursued research into integrated telemedicine and telecommunications

technologies with the goals of improving speed and accuracy of diagnosis, initiating emergency treatment during the critical first hour, and assisting emergency medical specialists or rescue teams in responding to medical emergencies in remote locations.

The emergency telemedicine project included four components in FY 1999. In the radiology component, the AMEDD advanced research to enable a low-skilled operator to acquire and transmit ultrasound images for interpretation by a radiologist. This capability will dramatically improve emergency diagnosis in remote or isolated environments. The home health component began evaluating the patient's own ability to operate medical monitoring devices linked to a supervising health care provider, again promoting early diagnosis and intervention. In the wavelet compression component, the AMEDD explored the application of advanced data technology to compress bandwidth requirements, thus further reducing the cost of telemedicine. Finally, the Center of Excellence for Biological and Chemical Medical Response continued working closely with emergency medical service providers in Philadelphia to apply telemedicine practices, and improve response, to biological or chemical disasters.

These efforts also support the Medical Communications for Combat Casualty Care (MC4) program, which received its first procurement funding during FY 1999. The MC4 program provides an integrated system of medical products, information, and communications capabilities to link all echelons of Army medical care both horizontally and vertically. Its equipment will eventually include the Warfighter Physiological Status Monitor, a device intended to monitor the soldier and automatically provide medical personnel with a location and vital signs in the event of an emergency. The MC4 program extends the promise of telemedicine and networked systems to frontline medical care.

There is a substantial gap between knowing about a wounded combatant and being able to provide medical intervention. The Army's FY99 budget included funding for several systems intended to improve the AMEDD's ability to provide combat medical support, addressing issues that came to light during Operation DESERT STORM. That operation revealed that both the M577A2 treatment vehicle and the M113 armored ambulance lack the speed, maneuverability, and survivability needed to operate with modern mechanized forces.

The FY99 budget included \$3.86 million for development of the Armored Medical Evacuation Vehicle, a modification of excess M2A0 Bradley fighting vehicles intended to replace the older M113 ambulance. The new vehicle maintains parts that are common with the Bradley vehicle family, integrates modern communications and vehicle performance capabilities, and can provide advanced trauma care at the pace of current mechanized operations. Another Bradley variant, based on the M4A1

command-and-control vehicle chassis, is the armored medical treatment vehicle. Leveraged from development of the command-and-control vehicle, which is differentiated only by mission-unique equipment, the armored medical treatment vehicle was an unfinanced requirement in FY 1999, intended to replace the obsolete M577A2.

The AMEDD's greatest medical modernization issue in FY 1999 was an entirely different type of vehicle. The UH-60Q medical evacuation helicopter, an upgrade of existing Black Hawk helicopters, completed operational testing in September 1998 and entered engineering and manufacturing development during FY 1999. Although the AMEDD sought to procure the UH-60Q at the earliest possible date, the deputy chief of staff for operations and plans preferred to postpone production until the start of the UH-60A service-life extension program in 2002. The two positions remained unreconciled through FY 1999.

Advanced capabilities to treat and transport wounded soldiers are of little use without skilled medics. During FY 1999, the AMEDD continued preparations for the transition to a new military occupational specialty, the 91W health care specialist. Combining the old 91B and 91C specialties, the new category would incorporate enhanced skills in combat casualty care, force health protection, ambulatory/emergency care, and extended critical care. The pretransition phase for the shift to the new classification, providing supplementary training to existing 91B and 91C specialists, was scheduled to begin in FY 2000.

The shortage of reserve-component medical personnel continued in FY 1999. A 1996 study by the Office of the Chief, Army Reserve, indicated that 81 percent of U.S. Army Reserve (USAR) physicians could mobilize for up to ninety days without serious consequences for their civilian practices, but extension beyond that time limit often led to loss of employment. As a result of this professional barrier, 34.2 percent of the physicians deployed in Operation JOINT ENDEAVOR and Operation JOINT GUARD left the USAR. Despite a reported overall officer and warrant officer fill rate of 104 percent in the AMEDD's reserve-component strength for FY 1999, the figure dropped to only 62 percent for officers and warrant officers in critical wartime specialties. Recruiting and retention efforts focused on this need, with little success.

Routine health care for active-component, active-duty reserve, and dependent personnel is provided through Tricare, the DOD's network of military medical facilities and civilian care providers. During FY 1999, the program expanded to include Tricare Prime Remote, a network of health care providers in areas removed from major military facilities. Although the program suffered from administrative problems, it did begin to offer Army personnel full health coverage despite the lack of local military care facilities. Congress included a similar program for retirees, Tricare Senior

Supplement, in the FY99 appropriation as a demonstration program. It was scheduled to open in eight locations during FY 2000, providing a Medicare supplement to program members.

During FY 1999, the AMEDD responded to the president's directive that all federal agencies place additional emphasis on the ability to manage the consequences of the use of nuclear, biological, or chemical (NBC) weapons against the United States. The AMEDD began a two-week Medical NBC Readiness Workshop, to be offered each September. Personnel from each service branch, including members of the ten National Guard Rapid Assessment and Initial Detection Teams that began forming in FY 1999, received training in medical responses to NBC threats. Workshop content is expected to change each year, as trained personnel are assigned worldwide to support military missions.

Army Chaplaincy

The Chaplain Corps furthered its efforts to adapt to the demands of increasing operating tempos and the needs of the Army's Force XXI and AAN architectures during FY 1999, including the need for expanded use of information technology. An important component of those efforts, the Chaplaincy Automated Religious Support System, entered service throughout the Army during the fiscal year. The system automates much of the clerical work associated with Army chaplains' religious support and special staff work. Its first module, the Command Master Religious Program, automates financial, manpower, and facility management. A related initiative, completed in June of 1999, provided video teleconferencing capabilities in each participating major command chaplain's office. The system can connect as many as twelve locations in a single conference, thus helping chaplains coordinate their efforts while providing a valuable humanitarian tool.

The Chaplain Corps continued to develop a conceptual framework and testable model for military religious support activities capable of meeting the requirements of activity-and service-based costing initiatives. The new framework redefined religious support programs as "social behavior products," identifying the costs of the chaplaincy in comparison with the resulting cost avoidance. This methodology reflects the unique character of religious support. Previous methodologies, developed outside the Chaplain Corps, followed medical or legal models in assigning cost structures. These models produced inaccurate results when applied to the chaplaincy.

The shortage of Army chaplains, particularly in the Roman Catholic denomination, persisted in FY 1999. The shortage of priests remained an issue throughout the United States in FY 1999, but the trend was particularly troubling in the Army, in light of the growing number of Roman Catholic servicemembers. In August 1999, senior Army leadership approved the

organization of the Directorate of Ministry Initiatives (DMI), which was slated to enter service in November 1999. The DMI is intended to bring about a more balanced representation of religious denominations in the Army chaplaincy, beginning with an aggressive campaign to increase the representation of Roman Catholics in the corps.

Army Pay

The strong economy of the mid-1990s produced public and congressional interest in a perceived gap between military and private-sector civilian pay. The financial boom brought with it expanded private-sector job opportunities, increased civilian pay rates, and a civilian standard of living that placed military housing and lifestyles at a disadvantage. Recruiting, retention, and morale suffered accordingly.

Army pay consists of the basic pay for a grade and time in service, supplemented by a basic housing allowance for personnel not living in military housing and a basic allowance for subsistence to cover meals for those not eating in military facilities. These three components combine to establish a figure for regular military compensation, the index of military pay most often used for comparison with private-sector civilian incomes. Special pay and bonuses, reimbursements, educational benefits, and nonmonetary benefits such as health care and access to military retail stores are specifically excluded from regular military compensation and most comparisons with civilian pay scales.

Increases in basic pay are linked to raises in civil service pay through a formula that applies to both, unless Congress acts to sever the two or make other adjustments for a specific budget cycle. Each quarter, the Department of Labor establishes the Employment Cost Index (ECI), a measure of wage increases for private-sector employees. Increases in general service schedule civil service compensation are established by comparing the ECIs for the third quarters of the previous two fiscal years. The resulting rate of increase, if any, less half a percentage point, becomes the basic adjustment in civil service and military pay.

That formula produced Army pay increases in fiscal years 1994, 1995, 1996, 1998, and 1999. Passage of the FY 2000 National Defense Authorization Act in 1999 suspended the formula from FY 2000 through FY 2006, setting a new military equation at ECI plus half a percentage point, a 1 percent increase over the former method. Congress generally ignores the statutory formula and the linkage between civil service and military pay by enacting specific legislation that is occasionally to the Army's benefit. In FY 1999, legislators surpassed the 3.1 percent increase dictated by the formula by authorizing a 3.6 percent pay raise for both military and civil service personnel.

As a measure of rates of increase rather than specific dollar amounts, the ECI does not facilitate a simple comparison between military and private-sector civilian pay. Although allegations of a civilian–military pay gap have persisted for decades, establishing an accurate comparison is difficult. The complexity of military pay and the nonmonetary compensation provided to servicemembers make any comparison with purely monetary private-sector compensation quite difficult, and the existence of any real difference is difficult to demonstrate or quantify.

Comparability with private-sector civilian pay is not the Army's primary interest in establishing compensation levels. Rather, the Army needs to ensure competitiveness. Total compensation for military service, comprising its monetary, nonmonetary, and intangible rewards, must compete with civilian compensation for both skilled recruits and the continuing service of career personnel. The Army pursued improvements in military housing, health care, educational benefits, and pay increases throughout the 1990s to maintain its appeal to high-quality personnel.

Army Housing

Improving Army housing remains a formidable challenge. Years of deferred maintenance and funds reallocated for more pressing needs left both barracks and family housing units in uncertain condition as the Army entered the realities of post–Cold War budgets and competitive personnel markets. In response to a 1992 tri-service survey of barracks conditions, the Army launched the Whole Barracks Renewal Program, intended to remodel or replace all barracks within the United States by FY 2007, those in Europe by FY 2010, and those in South Korea by 2014. A parallel Whole Neighborhood Program targets family housing and infrastructure on Army bases, seeking to bring all family housing up to Army standards by 2010. The Army maintained its dedication to those programs during FY 1999.

Housing is the Army's greatest quality-of-life issue and a major incentive in attracting and retaining soldiers. During FY 1999, the Army took significant steps toward implementing an innovative program to privatize most of the Army family housing in the United States. The goal was to revitalize or replace entire family housing communities at major installations. The Army issued a contract for the construction of 840 new family housing units and the renovation of 1,823 existing houses at Fort Carson, Colorado. The contractor assumed responsibility for the management of housing operations at Fort Carson and received rental payments from the occupants of family housing who began collecting the basic allowance for housing provided to families residing off-post. Planning for pilot projects at Fort Hood (Texas), Fort Lewis (Washington), and Fort Meade (Maryland) continued, with the goal of privatizing 13,711

family housing units at those installations. These efforts employed the legal authorities enacted by Congress in the 1996 Military Housing Privatization Initiatives Act, which authorized the services to attract private-sector expertise and capital to improve military housing.

Some military housing is simply too dilapidated for economical repair. The Army demolished 620 substandard houses during the year. Removal of the substandard units releases valuable base property for new housing construction or environmental restoration, furthering efforts to improve the quality of life on Army bases.

Providing single soldiers with housing that meets the one-plus-one standard is the highest priority in the Army's current facilities development effort. The standard calls for each single soldier to have a private living and sleeping area. Two such private areas share a connecting service area, containing a small kitchen and a bathroom. The Whole Barracks Renewal Program pursues the standard by creating brigade complexes. In addition to individual living space for a brigade's single personnel, the newly remodeled or constructed complexes systematically integrate the dining facility, community buildings, and headquarters areas for the brigade and its component battalions and companies. During FY 1999, the Army awarded contracts to modernize 11,700 spaces to the one-plus-one standard.

Army Safety Program

Army Safety Program analysts conclude that approximately 80 percent of Army accidents, in peace or war, are the result of human error. Safety Program personnel seek to reduce the volume and severity of such accidents through the training, technical support, and expert assistance they provide to Army commanders. Their efforts protect the Army's ability to execute its mission and promote recruitment and retention by maintaining the safety of Army posts and facilities.

SafeForce 21 is the Army's strategic plan for preventing personnel and materiel losses by integrating risk management into all Army activities. The effort begins with individual soldiers and civilians in their daily routines, and extends upward through planning and programming processes. SafeForce 21 seeks to promote risk-management efforts in the development of doctrine and training, in the acquisition process, and in combat operations. Army Safety Information Services and Technology software, the information technology component of SafeForce 21, is being developed to transform the existing accident database into a risk-management system accessible from unit-and installation-level information systems. When the software becomes operational, it will provide Army commanders with a risk-management information system capable of supporting individual initiatives while promoting the Army's overall safety program.

The Army Safety Center directs that overall program, collecting information on mishaps and issuing advisories about specific matters. Through *FlightFax*, *Countermeasure*, and the *Capp Report*, publications for the Army's aviation community, ground community, and civilian workforce, the Safety Center promotes awareness of safety issues relevant to those audiences. But unless required to do so by law or higher headquarters, the Safety Center does not impose operational restrictions. This approach differs from more traditional safety office practices, leaving responsibility for establishing acceptable levels of risk and appropriate management protocols to local commanders.

The greatest cause of accidental death among Army personnel remains the privately owned vehicle, typically outweighing even hostile action as a source of casualties. During the fiscal year, 124 soldiers died in motor vehicle accidents. This number is particularly disturbing because it has remained nearly constant in the late 1990s, despite the Army's overall decline in uniformed strength. In FY 1998, personal vehicle accidents claimed 117 soldiers. The number of fatalities was significantly lower in FY 1997 (91), but there were 130 in FY 1996 and 116 in FY 1995.

Army Career and Alumni Program

The Army Career and Alumni Program (ACAP) opened its doors in 1990. Since that time, the program has provided transition counseling and assistance to active-component personnel separating from the Army. That assistance includes career guidance, job-search counseling, and aid in identifying benefits and other programs available to individual servicemembers. In cooperation with state and federal employment offices, private employers, and educational institutions, the ACAP guides soldiers making the transition to civilian employment. The program also assists displaced civilian employees and military family members.

ACAP programs amount to far more than the expected résumé workshops and job fairs. The programs provide counseling on the transition to civilian life, which can be disorienting after a military career. The ACAP also identifies unique opportunities for former servicemembers, including the Montgomery GI Bill's education benefits, classes offered by the Small Business Administration, and loans available through the Department of Veterans Affairs.

Troops to Teachers is the newest program for former servicemembers. Established in January 1994, it capitalizes on the fact that long-term service in the armed forces provides military personnel with valuable experience in teaching. Troops to Teachers provides funding and special programs to encourage former soldiers to obtain teaching credentials and continue their public service as professional educators.

Army and Air Force Exchange Service

The Army and Air Force Exchange Service (AAFES) manages retail operations on Army posts worldwide. With more than \$7.1 billion in total annual revenues—which includes sales from post exchanges, fast-food franchises, theaters, and personal service providers—the AAFES was the eighth largest American retailer in 1999. During its 1999 fiscal year, which ran from 1 February 1999 to 29 January 2000, AAFES operations returned 67 percent of their earnings, \$243.6 million, or a record \$284 per soldier and airman, to support morale, welfare, and education programs. The AAFES accumulated that money by providing military personnel around the world with access to goods and services comparable to those available in small-town America. By using its earnings to support community programs, the AAFES promotes morale and the quality of life both directly and indirectly.

A virtual post exchange opened on the World Wide Web in 1996, beginning a new era for AAFES activities. By 1999, the initiative secured a fourth-place rating on the *Information Week* list of the top one hundred electronic commerce enterprises, and the General Service Administration's Office of Intergovernment Solutions cited the Web site as one of the best government sites providing online services. Through direct Internet access and dedicated electronic sales booths in post exchanges, the AAFES' electronic retail operation offers military personnel a substantially expanded range of goods. During the 1998 holiday season, the period of greatest retail activity in FY 1999, the AAFES shifted its electronic commerce operations from a proprietary mainframe program to a simplified Microsoft-based system. The success of the change and of the project as a whole is clear. Internet sales continued to increase, totaling \$24 million in 1999, and neither traditional catalog nor in-store sales suffered any long-term decline as a result of competition from the new service.

AAFES facilities may be found wherever the Army or the Air Force operates. In December 1998, the AAFES established field exchanges in El Salvador, Honduras, Guatemala, and Nicaragua to support Army and other U.S. military personnel involved in Hurricane Mitch relief efforts as part of Operation NEW HORIZONS. Another field exchange began operations in Tirana, Albania, during April 1999 to support personnel involved in Operation NOBLE ANVIL. Working from two truck trailers, the seventeen volunteer personnel involved in that exchange offered peacekeepers in the Balkans an array of goods similar to those found in an American convenience store. The AAFES also offered a taste of home to soldiers in the Balkans through Burger King restaurants it opened in Camp Bondsteel (Kosovo) and Sarajevo (Bosnia and Herzegovina).

The Joint Military Mall that the AAFES opened on Elmendorf Air Force Base, Alaska, in September 1999 stands in stark contrast to the

improvised field facilities in South America and the Balkans. The new structure is the centerpiece in the AAFES' plan to shift toward one-stop shopping in consolidated facilities. Combining the exchanges from Elmendorf and neighboring Fort Richardson, along with a commissary and specialty shops, the \$32 million, 330,000-square-foot building features native Alaskan architectural themes. The mall's lighting design secured nomination for both the International Illumination Design Award and the Guth Award of the Illumination Engineering Society. Similar joint or consolidated facilities are being constructed at Fort Bliss, (Texas), Fort Jackson, (South Carolina), Fort Buchanan, (Puerto Rico), and Hanscom Air Force Base, (Massachusetts).

Hollywood and the AAFES have a long working relationship, which continued during 1999 with a special pre-release screening of "Saving Private Ryan" for soldiers of the 101st Airborne Division at Fort Campbell, Kentucky. That unit was depicted in the hugely popular World War II film. The AAFES regularly provides first-run films to overseas personnel. The newest film in the Star Wars franchise, "The Phantom Menace," began showing on overseas bases only sixteen days after its commercial release in the United States. LucasFilms and 20th Century Fox also approved free showings of the hit movie for troops deployed in Bosnia, Kuwait, and Saudi Arabia.

Command Information

Soldiers perform better when they understand their orders and share a sense of unity and common purpose, and the nation benefits from public awareness of the Army's activities and mission. With that in mind, the Army maintains several programs to keep its personnel informed and provide information to the American public. Through the Hometown News Service, the Army Broadcast Service, *Soldiers*, and other publications and information services, Army leaders are able to provide information to Army personnel and the nation they serve. These activities are directed by the Army chief of public affairs.

The Hometown News Service, a joint venture of the Army and Air Force Offices of Public Affairs, generates stories of interest for daily and weekly newspapers throughout the country. These stories enhance public awareness of the contributions of local people and organizations to the Army mission, promote soldier morale, support recruiting efforts, and generally improve civil-military relations. The Hometown News Service also provides audio and video coverage for local radio and television stories. The service's staff of forty Army, Air Force, and civilian personnel produced approximately seven hundred thousand individual news releases for use by its twelve thousand print and broadcast media

subscribers during the fiscal year. That list of subscribers includes the 266 Army newspapers found on various posts and installations. The Hometown News Service's most popular product may be the "Holiday Greetings" television program, which annually provides thousands of video greetings from Army and Air Force personnel on overseas assignment for broadcast in their home communities.

The Army Broadcast Service operates a television and radio network for U.S. military personnel serving overseas. Through the American Forces Network (AFN) in Europe, Honduras, Kwajalein, and South Korea, the Army makes American television and radio programs available to U.S. military personnel around the world. AFN broadcasts improve the morale of servicemembers, civilian personnel, and their dependents. Beyond that simple and important function, they also provide a convenient mechanism for circulating important information and serve as a real-time source for emergency instructions.

The AFN Europe completed its transition to digital radio broadcasting in June 1999, thereby significantly improving the quality of its signal. More important for the Army's mission, however, was the AFN Europe's support for operations in the Balkans. The network began planning to provide radio and television for U.S. personnel in Albania during April, and, by 29 May 1999, Tirana airport featured large-screen televisions and radio receivers in high-traffic areas. Technicians brought AFN radio to Kosovo during the same period, with satellite and direct transmissions from Camp Bondsteel and Camp Monteith.

The AFN Honduras emerged during FY 1999 as the Army continued preparations to return the Panama Canal to the Republic of Panama. In 1987, the Southern Command Network (SCN) assumed responsibility for broadcast activities in Panama initiated by the Navy during contingency operations in the early 1980s. During 1991, the SCN opened a subsidiary affiliate in Honduras, which became the AFN Honduras when the SCN ceased operations as part of the withdrawal of forces from Panama. The new addition to the AFN provides radio broadcasts for Soto Cano Air Force Base as part of Joint Task Force-Bravo and is the home of the AFN Atlantic, a television broadcast contained in commercial satellite service from the United States.

Soldiers, the official magazine of the U.S. Army, added a new feature during FY 1999. *Hot Topics: Current Issues for Army Leaders* is a separate insert that focuses on issues of particular interest to the Army's leaders and trainers. Its second quarterly issue, in the fall of 1999, served as a conduit for introducing the Army's new fraternization policies. By providing extended, timely commentary on such matters, *Hot Topics* gives the Army's leadership another means to inform and unify Army personnel.

Army Tuition Assistance Program

The Army tuition assistance program provides soldiers with the opportunity to pursue their professional and personal educational development during off-duty hours. By providing financial assistance for such endeavors, the Army improves the skills of its workforce, promotes recruiting and retention, and reinforces its long-standing commitment to education and self-improvement. The tuition assistance program has long been one of the most popular programs offered by the Army Continuing Education System.

In FY 1999, a uniform tuition assistance policy was introduced throughout the DOD. Active-duty military personnel may now be reimbursed for 75 percent of tuition costs, up to a maximum of \$187.50 per semester-hour or \$3,500 per year, to attend accredited educational programs. Reimbursement is contingent on successful course completion. According to the new policy, a soldier may receive tuition assistance to repeat a failed course if he or she reimburses the government for any assistance received in support of the failed course. Although open to all Army personnel, the tuition assistance program is not blind to rank. Commissioned and warrant officers seeking tuition assistance are required to serve an additional two years of active duty. That obligation does not apply to enlisted personnel.

The Army offered additional educational benefits to soldiers during FY 1999. The Montgomery GI Bill is the best-known of these benefits, offering a minimum of \$23,400 in college benefits after completion of a two-year enlistment. The total educational benefit available to an individual under the provisions of the Montgomery GI Bill increases with more years of service and may be supplemented by specific recruiting incentives offered through the Army College Fund. The Army also offers scholarships to Reserve Officers Training Corps students and, through the Green-to-Gold program, to enlisted personnel attending college to receive Army commissions.

Army Sports Program

The Army sports program encourages soldiers to participate in athletic activities and organized competitive sports. An MWR activity, the sports program is intended to promote morale and physical fitness. Among its offerings is the World-Class Athlete Program, which allows qualifying soldiers to train for some of the world's most prestigious athletic contests.

The Army World-Class Athlete Program furnished 123 of the 312 U.S. military athletes and staff participating in the August 1999 Military World Games in Zagreb, Croatia. Similar programs from the other armed services supported the remaining 189 participants. The U.S. contingent finished

seventh among the 82 national teams engaged in the second iteration of the quadrennial event. Army athletes won three of the American team's eleven gold medals, four of the ten silvers, and two of the nine bronzes.

Ten members of the World-Class Athlete Program represented the United States in the Pan American Games in Winnipeg, Canada, during July and August 1999. The program fielded three wrestlers, one boxer, one pentathlete, a handball team of two, and three track-and-field athletes. Spc. Dominic Black won the gold medal in freestyle wrestling (97 kg); Spc. Dremiel Byers took a silver in Greco-Roman wrestling (130 kg); Spc. Dan Steele received a silver in the decathlon; Spc. Brett Wetherbee won a silver in the modern pentathlon; and Spc. Glenn Nieradka took a bronze medal in Greco-Roman wrestling (60 kg).

Construction, Facilities, and Real Property

Funding for active-component military construction increased substantially between FY 1998 and FY 1999, rising from \$437 million to \$869 million. Army Reserve construction funding more than doubled during the same period, from \$42 million to \$102 million. In contrast, the budget for National Guard construction actually decreased from \$215 million in FY 1998 to \$142 million for FY 1999. The overall infusion of funds allowed the Army to pursue a number of projects against the considerable backlog of renovation and new construction requirements presented by the Army's aging infrastructure.

Base closings and efforts to streamline Army operations helped concentrate construction and facilities maintenance funds by eliminating roughly 68 million square feet of excess building space between FYs 1992 and 1999. But the resulting consolidation of facilities is a mixed blessing. Although the reduction in authorized Army strength and facilities meant an overall decrease in the number of buildings and structures requiring maintenance, base closures also increased their average age or state of disrepair. As a result, the Army continues to fight a holding action against the degradation of its physical plant. That struggle is clear in the reserve components, which assumed control of many existing structures from the active Army through the base realignment and closure process. Between FYs 1997 and 1999, the average age of Army National Guard structures increased by only a single year, to thirty-five years, thanks to expansion of the inventory by some 897 facilities. But the percentage of those structures considered inadequate grew from 72 to 75 in the same period. Whereas the percentage of inadequate Army Reserve facilities remained static at forty-five over the same three fiscal years, their average age grew from thirty-three years to thirty-eight years through a 28 percent expansion in the inventory, a net addition of 2,130 individual structures.

The Army's reserve components have partially addressed the mismatch between authorized construction or renovation projects and their facilities requirements through innovative solutions. Reserve enclaves formed at active-component sites closed during the base realignment and closure process enable reserve-component organizations to move from expensive leased facilities to less costly government-owned properties. In addition to the enclaves, Joint Service Reserve Component Facility Boards meet at least annually in each state to evaluate proposed reserve construction projects for potential use by the reserve components of two or more of the armed services. That effort has not greatly benefited the Army because the number of facilities its reserve components use in conjunction with another service actually decreased between FYs 1997 and 1999. The loss of three joint facilities by the Army Reserve in that period was marginal, lowering the total from ninety-four to ninety-one. In contrast, the Army National Guard's use of such facilities declined precipitously in FY 1999. During FY 1998, Guard formations gained two joint facilities over the previous year, bringing the total to 544. But by the end of FY 1999, the Guard shared the use of only 162 joint facilities, a 70 percent decline.

Military construction projects are often a source of controversy, as legislators attempt to include funding for unrequested local projects in the Military Construction Appropriations Bill. Senator John McCain (R-Az) strongly criticized the practice in a statement before the Senate during discussion of additions to the FY99 Military Construction Appropriations Bill. The senator identified 114 projects within the bill that were not requested by any of the services, representing a total expenditure of almost \$600 million. Those projects included ten unrequested National Guard and Reserve centers, costing a total of almost \$65 million. Another \$12 million was scheduled to replace dining halls at two joint civilian-military airports, at Dannelly Field (Alabama) and Fort Wayne (Indiana). In total, 95 percent of the construction projects entered into the bill by amendment were in the home states or districts of appropriations committee members. Many of them remained in the final act as approved by the legislature.

The Army also faced unusual challenges in facilities management during FY 1999. In August 1998, heavy rains produced severe flood damage to several U.S. installations in South Korea. Camps Casey, Hovey, and Red Cloud required substantial repair and new construction work when the waters receded. By 30 June 1999, the Army Corps of Engineers had awarded eight contracts to restore damaged Army facilities to normal operations. They included construction of five two hundred-person barracks, four forty-eight-person bachelor officers' quarters, twelve company operations facilities, four warehouses, three armored vehicle maintenance facilities, and six administrative centers. Approximately fifty

Army Corps of Engineers personnel from stations in the United States and Japan volunteered to assist with the projects, primarily through thirty-day temporary-duty assignments. Many of those volunteers served more than one rotation through the recovery projects, while personnel remaining in the Corps' Engineering Division postponed leave and worked substantial overtime throughout the year to meet the projects' needs. Early in FY 1999, personnel in the Design Branch worked thirty to forty hours of overtime each pay period, developing plans for the effort.

Panama offered a challenge even more unusual than extensive flood damage. Control of the Panama Canal reverted to the Republic of Panama on 31 December 1999. As the last full fiscal year of U.S. control over the canal, final preparations for the transfer of American facilities and property to Panama were conducted in FY 1999. The process originated in the Panama Canal Treaty of 1977, signed at a meeting of the Organization of American States by U.S. president Jimmy Carter and Panamanian president Omar Torrijos. On 1 October 1979, operation of the canal became the duty of the Panama Canal Commission, under the leadership of the former commander in chief, Southern Command, Lt. Gen. (Ret.) Dennis P. McAuliffe, while the Panamanian government took control of most of the former Canal Zone.

With final transfer of the canal at 1200 hours on 31 December 1999, the United States would also transfer ownership of fourteen military installations in the former Canal Zone. After more than twenty years of preparation, in March 1999 the Army still retained roughly half of its holdings in Panama. They included 93,000 acres of land and forty-eight hundred buildings spread over the fourteen installations. Fort Sherman, on the Atlantic side of the canal, experienced a dramatic increase in workload after the last class graduated from its Jungle Operations Training Center in March, as other units inactivated and relocated through its facilities.

U.S. Army South (USARSO) activated its new headquarters at Fort Buchanan, Puerto Rico, in July and finalized plans for the withdrawal of Army personnel from Panama. Equipment from Army and other service facilities that could not be relocated for further use was transferred to humanitarian aid groups or sold through the Defense Reutilization Office. The USARSO designated four hundred housing units as transient housing where personnel could reside for up to sixty days before departure from Panama, the estimated transit time for household goods. All dependents were ordered out of the country by August. The USARSO maintained its theater engagement plan as the transfer process continued, including scheduled exercises, military-to-military exchanges, and humanitarian and counternarcotics operations. On the final day of FY 1999, the Army stood ready to complete its withdrawal from all facilities in Panama without disrupting its mission capabilities.

8

Special Functions

As one of the nation's most prominent and enduring institutions, the Army necessarily confronts a wide variety of special issues and concerns in its daily routine. Army personnel must respond to those challenges not only in the best interests of the Army and its mission, but also in a manner befitting its social responsibilities as an exemplar of government policy and good corporate citizenship. In addition to standard policies and training, the Army supports a number of dedicated efforts to address these needs.

Environmental Protection

Corporate experience has demonstrated that cost-effective environmental management programs can reduce the consumption of resources and protect the environment without undue disruption to an enterprise's core functions. With that lesson in mind, the Department of Defense (DOD) integrated environmental protection into its decision-making process. The DOD's announced environmental objectives are to protect people, manage properties judiciously, promote good citizenship, and set an example for the world's military forces. The Army pursues those objectives in its daily operations, aided by dedicated programs.

In FY 1999, the Army received \$1.56 billion to support environmental quality and restoration and related technology development efforts. Only a slight decline from the \$1.59 billion dedicated to such tasks in FY 1998, that funding level permitted the Army to maintain its environmental efforts despite escalating costs. The U.S. Army Environmental Center (USAEC) continued its campaign to contain those costs while sustaining readiness and environmental stewardship. By finding new ways to maintain training areas, preventing pollution at Army installations, and developing cost-effective strategies for meeting environmental standards, the USAEC's efforts directly contributed to the Army's ability to achieve its mission goals.

As a field operating agency of the assistant chief of staff for installation management, the USAEC coordinates, promotes, and supports the Army's environmental programs under the leadership of the director of

environmental programs. With direct control over only \$67.6 million of the Army's \$1.56 billion environmental budget and another \$17.1 million in reimbursable programs in FY 1999, USAEC activities produced long-term savings of more than \$180 million during the year. The remainder of the Army's environmental budget was divided among various commands, which seek to meet individual goals with the USAEC's oversight and technical support.

The USAEC improved its capacity to provide that oversight and support during the fiscal year. In FY 1999, the independent technical review (ITR) program expanded to include active installations. The ITR began in 1997 as part of the base realignment and closure (BRAC) process, dispatching teams of specialists to evaluate independently Army environmental cleanup projects at inactivated facilities. The multidisciplinary teams sought to reduce the cost and time associated with environmental restoration while ensuring compliance with relevant regulations and agreements.

The program's expansion paid rapid dividends. ITR teams evaluated eleven active installations during the fiscal year. Their recommendations at just five of those installations identified more than \$80 million in long-term savings. ITR experts also assessed efforts at eight posts undergoing the BRAC process during the year. In addition, the teams returned to several previously evaluated sites to assist with implementation of earlier recommendations.

At Fort Gillem, Georgia, an ITR team's recommendations contributed to a \$44 million decrease in the estimated cost of environmental cleanup efforts. Familiar with such results, the leaders of the Badger Army Ammunition Plant in Wisconsin summoned assistance from ITR experts when they received an estimate of \$166 million for the planned excavation and treatment of explosives-contaminated soil at two sites on the facility. Their revised plan, limiting the depth of excavation based on the low long-term threat posed by the site, reduced that estimate by \$140 million. The ITR teams' effectiveness at those two active sites is indicative of the program's potential.

The lessons learned by ITR assessments are posted on the USAEC Web site and published through various media to guide the Army's future efforts. To guarantee that the Army reaps the full benefits of experience garnered through the ITR, the USAEC also began hosting workshops on principles of environmental restoration. These workshops help Army program managers, regulators, and other interested parties outline goals and strategies for installation cleanup projects.

Sound strategies make a significant difference in the cost effectiveness of restoration efforts. The USAEC's Groundwater Extraction and Treatment Effectiveness Review program helps installations find alternatives to the expensive and lengthy process of pumping out and treating contaminated

groundwater. Some installations failed to consider other options when they initially began addressing the problem of groundwater pollution. The USAEC estimates that the Army could save \$100 million during the next decade by optimizing existing groundwater treatment efforts and establishing more rational objectives.

Preventing further environmental damage is a sure way to reduce the cost of future clean-up requirements. The Army made a significant step in that direction during FY 1999 with the production and use of the first "green ammunition." New 5.56-mm rounds that replaced the traditional lead bullet core with tungsten-nylon entered the Army inventory. That change in the Army's standard rifle ammunition, part of a comprehensive effort to make all DOD ammunition more environmentally friendly, eliminates the expense of removing heavy and potentially hazardous lead from the soil of Army ranges. As an added benefit, the new rounds are slightly more accurate than their predecessors and produce less erosion in weapon barrels over time. The USAEC continued working with the Army Armament Research, Development, and Engineering Center to develop lead-free versions of other rounds and reduce the usage of toxic substances employed in the manufacturing process.

Those efforts also support Range XXI, the partnership between the Army's environmental, training, and materiel-development communities to promote the cost-effective management of firing ranges while conducting realistic training. Nontoxic ammunition is only one of Range XXI's environmental concerns. The USAEC worked with the Aberdeen Test Center at Aberdeen Proving Ground, Maryland, and the West Desert Test Center at Dugway Proving Ground, Utah, to identify and quantify the chemical emissions of more than twenty weapons, pyrotechnics, and projectiles during FY 1999. The data collected will help the Army address regulatory concerns with scientific fact, limiting potential restrictions on training and protecting soldiers' health.

USAEC scientists also cooperated with the Army Engineer Research and Development Center's Waterways Experiment Station to test a new technology for controlling erosion and reducing lead contamination on Army ranges. Shock-absorbing concrete, a recyclable, low-density, fiber-reinforced foamed concrete composite, is designed to trap bullets. The new material offers a cost-effective means of preventing bullets from accumulating in the soil of busy ranges while it controls erosion. The result is more flexibility in range use without the sacrifice of training realism or environmental quality.

On another front, the Army met the Environmental Protection Agency's December 1998 deadline to upgrade existing underground storage tanks by installing devices to prevent leaks and spills. The USAEC played a large role in supporting the Army's efforts to remove or upgrade more than

seven thousand storage tanks. The Environmental Compliance Assessment System, managed by the USAEC, helps facility commanders monitor compliance with such requirements and identify potential problems as they emerge. Those efforts protect the environment, improve local quality of life, and prevent the loss of Army appropriations through costly paperwork and fines.

The 1990 Clean Air Act threatened the Army with such expenses early in FY 1999. Before the act's June 1999 implementation deadline, according to a USAEC survey, fifty-four Army installations had to prepare risk-management plans against the possible accidental release of hazardous materials. After fully exploring the legislation's requirements, the USAEC was able to help thirty installations eliminate the need for risk-management plans by reducing their supplies of targeted chemicals. That saved the Army \$1 million, and compliance with the resulting plans will reduce the threat of accidents at the remaining installations.

The USAEC also helps the Army shape and interpret local and federal environmental legislation. In Colorado, a new state law strictly limiting airborne emissions from federal facilities would have had serious consequences for Army activities in the state. The USAEC's Western Regional Environmental Office teamed with other services to demonstrate to state legislators that the DOD's emissions-control activities already met or exceeded federal requirements. The effectiveness of those activities convinced the bill's sponsors to exempt military activities, saving the DOD \$16 million in initial costs and \$1.6 million in annual reporting and maintenance costs.

Many states required guidance on implementation of the Environmental Protection Agency's 1997 Military Munitions Rule before deciding how to implement it or incorporate its provisions into state laws. The Army's regional environmental coordinators held briefings and workshops for regulators and lawmakers across the country during FY 1999 in an effort to explain the rule and its importance in supporting military readiness. Consistent and rapid adoption of the rule, which classifies some expended or surplus munitions as a form of solid hazardous waste and governs the handling of such waste, will permit the Army to continue realistic training without significant disruption or additional regulatory costs. By the end of FY 1999, the rule was fully adopted by twenty-one states. Four other states adopted it with amendments.

The Army guarantees that its leadership is informed about developing federal, state, and local environmental legislation through the USAEC's Environmental Legislative and Regulatory Analysis and Monitoring Program (EL/RAMP). During FY 1999, the EL/RAMP's ability to track regulatory development was enhanced through significant refinement of its primary analysis and reporting tools, the Semiannual Report System

and the Final List of Regulatory Actions. The USAEC also worked with the Army Secretariat and various Army Staff components to develop standard EL/RAMP operating procedures, prescribing specific tasks each client requires from the program, to streamline and improve its ability to communicate issues up the chain of command.

The USAEC also helped produce a draft DOD Interim Land Use Controls Policy during the fiscal year. The policy distinguishes between remedies prescribed by the 1980 Comprehensive Environmental Response, Compensation, and Liability Act (more commonly known as the environmental Superfund) and other restoration efforts. Land use controls, administrative measures limiting access to contaminated areas, provide a cost-effective tool in the BRAC process. Restoring a former military site to the Environmental Protection Agency's stringent residential standards makes little economic sense if the BRAC process designates it for industrial development, a use with less stringent environmental controls and one that is likely to reverse the results of restoration to residential standards. By ensuring that the exposure assumptions governing site assessment are consistent with a site's future use, the policy avoids unnecessarily expensive restoration efforts while it protects the environment and public health.

Small and Disadvantaged Business Utilization

The Army gains access to the innovation and efficiency of small companies through the Small and Disadvantaged Business Utilization (SADBU) program, bringing the ideals of equal opportunity advocated in other activities into the realms of contracting and procurement. The SADBU made substantial progress during the fiscal year, once again expanding the roll of small and disadvantaged businesses in Army procurement and the Army's association with historically black colleges and minority institutions.

The first preferential Historically Underutilized Business Zone (HUB-Zone) contracts were created in FY 1999. The Small Business Reauthorization Act of 1997 established the HUBZone Empowerment Contracting program under the auspices of the U.S. Small Business Administration. The program supports economic development in HUBZones through systematic preferences in federal contracts, including the Army's SADBU efforts. On 4 January 1999, the provisions of the 1997 act were implemented through the interim Federal Acquisition Regulation, FAC 97-10, FAR Case 97-307.

Under that regulation, small businesses in regions of high poverty or unemployment gain preferential federal contracts if their bid is no more than 10 percent higher than the lowest valid bid received. Firms must be pre-certified to take advantage of the program, demonstrating that

their workforce and principal office reside within a HUBZone. Under definitions current in FY 1999, these zones are located in approximately seven thousand urban census tracts, nine hundred rural counties, and defined Native American tribal areas. The program promotes economic development and employment growth in these financially troubled areas.

During FY 1999, the Army awarded 27.4 percent of its total procurement funds to small businesses. That percentage surpassed DOD expectations for prime contracts awarded to small businesses, equating to more than \$7.9 billion. Small disadvantaged businesses received \$2.8 billion from the Army, approximately 35 percent of that amount.

Army participation in the DOD's Pilot Mentor-Protégé Program (MPP) helped generate that success. Through the MPP, prime contractors serve as mentors to small and disadvantaged businesses, guiding their entry into the DOD marketplace. The MPP provides mentor firms with credit toward small and disadvantaged business subcontracting goals or cost reimbursement in exchange for their participation. By the end of FY 1999, the Army has approved forty-eight mentor-protégé agreements across a broad range of industries, including environmental restoration, manufacturing, telecommunications, and health care.

In FY 1999, the Army took the MPP a step beyond the DOD program through its Graduate Pilot Mentor-Protégé Program. Under this arrangement, firms graduating from the Small Business Administration's 8(a) program for socially and economically disadvantaged businesses, including the MPP, and other successful small and disadvantaged firms serve as mentors to emerging 8(a) Army contractors. The Army received a waiver to allow up to ten 8(a) contractors to serve as mentors in the program without the subcontracting plan normally required by the DOD. Nine mentor-protégé agreements under the new program helped the Army rank first among the services in total percentage of funds awarded through the small business program.

Army contracts also embraced historically black colleges and universities and minority institutions (HBCU/MIs) under objectives the Army established in cooperation with the DOD during FY 1994. Those objectives are an increase in the number of research centers on HBCU/MI campuses; expanded HBCU/MI participation in Army research programs, particularly among smaller institutions; greater opportunities for the HBCU/MIs to participate in training, education, and research activities; and increased subcontracting at the HBCU/MIs by the Army's prime contractors.

During FY 1999, the Army awarded forty-three research contracts of varying types, totaling \$4.7 million, to twenty-three HBCUs. That funding level represents a \$1.4 million growth over the previous year. Research grants to the HBCUs increased by \$700,000, reaching \$6 million.

The eighteen grants divided that sum among twelve recipient schools. Researchers at Clark Atlanta University in Atlanta, Georgia, received the most support—\$1.1 million. Howard University in Washington, D.C., received \$477,000 in research grants; Alabama A&M in Huntsville won \$264,000; and Meharry Medical College in Nashville, Tennessee, received the fourth-largest grant, \$260,000.

The Army began recording figures for contracts with Hispanic-Serving Institutions (HSIs) in FY 1998. During FY 1999, two additional HSIs began participating in Army contracting and grant programs, thus expanding the total to fourteen schools. The research contracts and grants they received totaled \$10 million. The Army Materiel Command provided an additional \$3.3 million to New Mexico State University under a contract awarded in FY 1998.

Three Native American tribal colleges also participated in the Army HBCU/MI program during FY 1999. Salish Kootenai College in Pablo, Montana, continued to perform archeological research and records management services at Montana's Libby Dam for \$35,758 under the second of four option years of a Corps of Engineers contract. Haskell Indian Nations University, in Lawrence, Kansas, received a research contract worth \$68,990. Stone Child College in Box Elder, Montana, received a research grant for \$37,590. This marks a 75 percent increase in tribal college funding over FY 1998's only award (\$34,995 for Salish Kootenai's activities at Libby Dam).

Legal Affairs

The Office of the Judge Advocate General (OTJAG) provides the Army with legal services and oversees its system of military justice. From three hundred offices in the United States and sixteen foreign countries, 1,450 active-component and 2,700 reserve-component OTJAG attorneys directed those complex and important efforts during the fiscal year. Over the previous five fiscal years, the OTJAG has suffered a 41 percent decrease in officer accessions, despite a 25 percent increase in the number of commissions offered. OTJAG attorneys at the grade of captain have also left the Army in great numbers in recent years, thereby increasing the need for replacements in a difficult recruiting climate. Approximately 73 percent of the officers leaving active duty with the OTJAG in FYs 1998 and 1999 cited financial pressure caused by student loans as the primary reason for their decisions. With an average of 3.8 years in service, departing judge advocate officers received salary offers from \$69,100 to \$112,000 per year, with an average of \$77,600.

The OTJAG processed 1,045 courts-martial, including 342 special courts-martial authorized to dispense bad conduct discharges, during FY

1999. Both figures represent an increase over the previous fiscal year's 972 total and 273 bad conduct special courts-martial. FY 1998 appears to have had unusually low courts-martial rates and correspondingly higher rates of nonjudicial punishment, however. With that exception, comparing the rate of general courts-martial and nonjudicial punishment per thousand active-component soldiers for FY 1999 with the same figures for the preceding six years reveals fairly consistent disciplinary rates. Those figures appear in Table 19.

TABLE 19—DISCIPLINE RATES PER 1,000 MEMBERS:
FY 1993 THROUGH FY 1999

<i>Form of Discipline</i>	<i>FY 1993</i>	<i>FY 1994</i>	<i>FY 1995</i>	<i>FY 1996</i>	<i>FY 1997</i>	<i>FY 1998</i>	<i>FY 1999</i>
General court-martial	2.20	2.19	2.25	2.32	2.24	2.01	2.23
Nonjudicial punishment	75.42	75.00	73.64	74.18	82.21	85.62	77.24

Two of the courts-martial convened in FY 1999 were particularly noteworthy. In December 1998, a joint commander ordered an Army court-martial in Germany to hear charges against a soldier, only the second time in the Army's history that the convening authority for a court-martial was an officer in another service. In the second notable case, retired Maj. Gen. David R. E. Hale became the first general officer in all of the armed services to be court-martialed since 1952 and only the second since World War II. Charges were filed against the general on 9 December 1998 after a year-long investigation. On 17 March 1999, Maj. Gen. Hale appeared before a military judge and pleaded guilty to one specification of making a false official statement and seven specifications of conduct unbecoming an officer. The offenses involved inappropriate relationships with the spouses of four of his subordinates. By pretrial agreement, the sentence was limited to forfeiture of \$1,000 pay per month for a full year, a reprimand, and a \$10,000 fine. Courts-martial cannot reduce an officer's grade, but federal law states that officers are retired at the highest grade in which they served satisfactorily. Subsequent investigation by a grade determination review board found that Hale had last served satisfactorily as a brigadier general. On 2 September 1999, Secretary of the Army Louis Caldera ordered his reduction to that rank, retroactive to the general's 1 March 1998 retirement.

In FY 1999, another general officer, Maj. Gen. John J. Maher III, became the first Army general subjected to nonjudicial punishment since 1981. The general was found guilty of two specifications of conduct

unbecoming an officer and one specification of attempted fraternization with an enlisted soldier during a nonjudicial punishment hearing in September 1999. He received a reprimand and forfeited \$4,316 in pay per month for two months. Maher submitted a retirement request in September, but in response to the Hale case the secretary of defense had instituted a new retirement policy in October 1998. Under that policy, the Army no longer honors retirement requests from officers under investigation without careful review. Secretary Caldera directed a grade determination review board to convene on 1 October 1999 to recommend the appropriate grade for Maher's retirement.

The OTJAG pursued 250 more informal equal employment opportunity complaints in FY 1999 than it did in the previous year, but the number of formal complaints declined by one hundred. Army civilians continued to file complaints for alleged discrimination based on race, color, religion, sex, national origin, age, and disability. The number of such complaints addressed by alternative dispute resolution procedures more than quadrupled over FY98 levels as the OTJAG worked with specialists at Headquarters, Department of the Army, and at the DOD to develop an Army-wide program for mediation and dispute resolution. The effectiveness of those efforts accounts, in part, for the reduction in formal complaints.

During FY 1999, the OTJAG's Procurement Fraud Division opened 206 new cases involving fraud or irregularity in Army procurement. The new cases, a 25 percent reduction from the number of new cases in FY 1998, left a total of 560 active cases at the end of the year. The Procurement Fraud Division pursues a broad range of activities, from prosecuting corrupt federal employees and contractors to investigating the failure of critical parts procured under major contracts. The steady decline in the number of new procurement fraud cases filed continued in FY 1999.

Legal assistance services are tracked by calendar rather than fiscal year. During the 1998 calendar year, which ended during FY 1999, family law advice displaced estate advice as the primary service sought by Army personnel. During 1998, the OTJAG recorded a 27 percent increase in marital separation agreements prepared. Other comparisons with 1997 figures showed similar results: a 20 percent growth in notary services, 17 percent growth in the number of powers of attorney, and 6 percent growth in wills. At the same time, the 5,456 referrals the OTJAG provided to civilian attorneys more than doubled 1997's total of 2,150.

Beyond adjudicating cases and providing legal assistance, OTJAG personnel assist in implementing and revising military law and procedures. During FY 1999, the Joint Service Committee on Military Justice (JSC) completed its fifteenth annual review of the Manual for Courts-Martial, with input by lawyers from each service. The JSC review proposed changes in

the manual to correspond with the civilian provisions of the Victim's Rights and Restitution Act of 1990. Under the proposed revision, victims who may testify during sentencing for a court-martial may not be excluded from the court room during other phases of criminal proceedings. The JSC also suggested changes in a military judge's authority to issue protective orders, and provided guidance on when adulterous conduct becomes prejudicial to good order and discipline. Other proposed changes increased the monetary thresholds for the maximum punishments for some offenses and expanded the maximum penalty for selling captured or abandoned property when firearms or explosive devices are used in relation to the offense.

The OTJAG continued to implement congressional mandates and DOD policy regarding victim and witness assistance. Following the success of the first on-site victim and witness assistance training program (held at Fort Belvoir, Virginia, on 25 September 1998), the OTJAG offered training programs at fourteen large Army posts in the continental United States and at locations in Hawaii, Germany, and Korea during FY 1999. The curriculum at these seminars, which hosted up to 270 participants, included victim and witness notification requirements, post-trial procedures involving prisoners, and treatment and compensation programs.

Army attorneys faced many challenges as U.S. forces continued to withdraw from Panama. A large number of legal issues emerged as the November 1999 deadline for the transfer of military facilities approached. These issues included Panama's initial refusal to accept ranges after the removal of unexploded ordnance; continued U.S. control of the Veteran's Cemetery in Panama; transfer of property to the Panama Canal Commission; and issues related to criminal jurisdiction, family support, and child custody.

The relocation of forces from Panama to Puerto Rico focused attention on a long-standing dispute over application of the Soldiers' and Sailors' Civil Relief Act of 1940. Authorities in Puerto Rico ultimately agreed to exempt military personnel from property taxes. Army attorneys also continued to ensure that the relocation and related construction programs complied with all applicable laws, including those related to historic and environmental preservation.

Inspector General Activities

The inspector general (IG) and the U.S. Army Inspector General Agency conduct investigations into the discipline, efficiency, economy, morale, training, and readiness of the Army. During FY 1999, the IG received 1,993 Inspector General Action Requests (IGARs), a slight increase over FY 1998's 1,854. Requests for assistance from both military and civilian personnel in the Department of the Army made up two-thirds

of the case load, with 1,317 individual inspections. The remaining 676 IGARs resulted from direct allegations from various sources. The IG substantiated 215 (32 percent) of those allegations, could not substantiate 421 (62 percent), and in 40 cases (6 percent) could neither substantiate nor refute the alleged problem.

Inquiries and investigations by the IG originate from a number of sources. The DOD Hotline for fraud, waste, abuse of authority, and mismanagement produced 487 IGARs in FY 1999. Allegations of reprisals against internal complainants in violation of the Military Whistleblower Protection Act, revised in 1998, continued to fall. The IG received only thirty-seven IGARs alleging whistleblower retaliation in FY 1999, a decrease from the previous fiscal year's forty-four. The IG undertook fifteen actions at presidential request, one less than FY 1998's sixteen presidential IGARs. Congress increased its use of the IG by seven IGARs, producing ninety-six during the fiscal year. The senior leadership of the Army and the DOD, however, expanded their demands on the IG at a faster rate. In FY 1999, those sources produced sixty-one IGARs, twelve more than in the previous year.

Most IGARs originating in FY 1999 fell into one of six functional categories. Personal conduct issues, including sexual harassment, racial discrimination, and nonsupport of family, accounted for 561 (28 percent of the total) of the year's IGARs. Another 362 (18 percent) addressed the command and management of Army organizations. These actions involved command attention to soldiers and family members, property handling, and the exercise of command influence, among other concerns. Military personnel management issues, including recruiting, reassignments, evaluations, promotions, separations, awards, and decorations, drove 301 (15 percent) of the IGARs in FY 1999. Civilian personnel management issues added 186 (9 percent) additional IGARs. Health care concerns, including medical evaluation boards, medical staff attitude complaints, medical records, and the DOD Tricare system, produced 95 IGARs (5 percent). The final major category, acquisition, raised questions about policies and procedures, contract administration and surveillance, and competition. Those 84 IGARs accounted for 4 percent of the total number of requests. The IG actions addressing concerns beyond those six major categories accounted for the remaining 404 FY99 IGARs.

The IG's Investigations Division also received allegations against 698 general officers, Senior Executive Service and other civilian employees, and officials in high-visibility positions during the fiscal year. Abuse of authority was the most common complaint. The division completed fifty-five formal investigations and 133 preliminary inquiries against the accused. Those proceedings substantiated only 14 percent of the 188 allegations.

To ensure the Inspector General Agency's continued ability to exercise

its various functions, the Training Division conducted nine inspector general courses. The three-week courses qualified 502 students in IG functions: 240 Army officers, 200 Army noncommissioned officers, 44 Army civilians, and 18 students from other services. Two one-week refresher courses prepared thirty-one more personnel for their roles with the IG, thus promoting the efficiency and effectiveness of the Army.

The Year 2000 Computer Problem

The approach of 1 January 2000 posed a potential threat to the world's information systems, including those belonging to the United States Army. Various referred to as the Millennium Bug, the Year 2000 Challenge, or simply the Y2K problem, the threat originated in the method that many computer operating systems and programs use to handle dates. From the origins of the computer age through the mid-1990s, software developers commonly abbreviated years as their final two digits to reduce memory requirements and increase computing efficiency. Given the rapid advances in information technology, programmers had little reason to question the convention, assuming that new equipment and software would replace their creations long before the last year of the twentieth century could compromise them. But the convention persisted in some software and operating systems, along with older computer systems and databases that proved too expensive to replace or too labor intensive to re-create.

Information systems designed for use with two-digit dates are unable to distinguish between the years 1900 and 2000, rendering both as "00." Although at its core this was a simple problem, the magnitude of its potential consequences and the efforts required to avert them were staggering. Without intervention, each system using the shortened date system would respond to the year 2000 based upon its unique provisions, perhaps in unpredictable ways. In the civilian sphere, uncorrected accounting and banking systems faced potentially widespread errors or outright failures. Power grids, emergency dispatch centers, transportation schedules, and traffic control systems faced possibly crippling disruptions. Problems were already occurring as systems began to encounter dates including the year 2000. Some automated inventory-control systems, for example, were trying to ship perishable items with expiration dates in 2000 ahead of items with earlier dates because "00" comes before "99."

Army information systems confronted identical problems plus two additional burdens. As the calendar turned to 1 January 2000, the Army had to maintain its foreign mission readiness and be able to support domestic civil authorities facing emergencies arising from Y2K-related systems failures. Meeting the challenge required efforts from every information system user, coordinated and supported at every level of the

chain of command. The DOD was treating the Y2K threat as a cyber attack directed at the core of American military capabilities: the ability to obtain, process, and control the information that enables U.S. forces to dominate the battlefield.

The scope and complexity of the DOD's required defense against Y2K eclipsed those facing any other federal institution. More than a third of the federal government's mission-critical information systems were located in the DOD. On 14 September 1998, a DOD memorandum barred further growth of the problem by ordering contracting officers to cease obligating funds or initiating procurement procedures for any non-Y2K-compliant system after the end of FY 1998. The same memorandum required all services and agencies to report to the secretary of defense before 1 October 1999 the Y2K compliance of systems scheduled for acquisition during the new fiscal year. The FY99 Omnibus and Supplemental Spending Bill signed by President Clinton on 21 October 1998 included \$1.1 billion to fund the DOD's continued Y2K preparation efforts.

Many of the federal government's critical systems were included in the twenty-five thousand information systems the Army needed to prepare for the end of the calendar year. Microprocessors in six hundred thousand additional devices, ranging from communications and medical equipment to precision-guided munitions, had to be prepared and tested to guarantee their continued mission readiness. The Army effort to prevent Y2K problems consumed \$600 million—over half of all DOD Y2K preparation funds—during FY 1999.

Army Operations Order 99-1, Millennium Passage, issued in January 1999, emphasized the effort's importance. The order outlined the remaining preventive actions and contingency preparations the Army needed to complete before 31 December 1999. The remedial process had begun much earlier, with a 1996 Army Acquisition Executive policy memo and the release of the Army Y2K Management Plan in October of that year. Activities under Army Operations Order 99-1 marked the culmination of three years of effort.

By early 1999, many Army computer systems had already been prepared, checked, and certified ready for the year 2000. Installation and garrison commanders had designated personnel and resources to execute Y2K preparation programs. Those local personnel coordinated their activities through the Army Y2K Project Office, physically located in the Army Information Integration and Analysis Center at the Pentagon but directly accessible through a dedicated Web page. Major commands and field activities promoted specific efforts and programs through their chains of command, within the framework of the larger Y2K program. Under the director of information systems for command, control, communications, and computers (DISC4), the Y2K Project Office implemented the DOD

approach of centralized policy and decentralized execution.

The Army Y2K Management Plan originally specified 31 December 1998 as the final date for completion of all required preparations, but the task proved too complex to meet that goal. Changing one system can have consequences elsewhere in an information network, requiring certification of each minor change by large-scale testing. On 9 December 1998, the DISC4 led the fourth operational evaluation of Army Y2K preparation efforts—the first of several evaluations conducted during FY 1999 as the pace of final preparations accelerated. The evaluations extended beyond purely Army or DOD systems to address cooperation with, and the concerns of, local communities. Some Army posts share utilities with neighboring communities, and a large population of uniformed, civilian, and retired personnel live near Army facilities. For those reasons the Y2K preparedness of surrounding communities had to be considered in Army planning. Continued investigative efforts identified areas requiring further improvement as the year progressed.

For example, a series of tests conducted between 7 June and 23 July 1999 assessed the Army personnel system's preparedness for Y2K. Within that period, six testing windows enabled the Army's information technology specialists and personnel systems end users to reset calendars throughout entire information networks. By entering two critical dates, 1 January 2000 and the leap day of 29 February 2000, in a total of more than thirty-two thousand date fields, examiners verified the networks' capability to execute 106 critical transactions. Those transactions allowed end-to-end testing of fifteen different information threads, such as the processing of a new recruit from accession, through the creation of a base record and initial pay receipt, to training and first assignment. Such threads in turn supported six mission-critical Army personnel functions. The Army Audit Agency provided independent validation of these tests and of other tests organized by the Joint Chiefs of Staff.

Continued analysis of the Y2K challenge and the Army's readiness to meet various contingencies also required clarifying the level of support that civilian authorities facing Y2K-related crises could expect. Under the DOD Year 2000 Consequence Management Plan, the Army's director of military support (DOMS) was charged with providing domestic contingency support. But in February 1999, Deputy Secretary of Defense John J. Hamre emphasized that the military's defensive mission took precedence over civilian support and was not to be compromised by such activities. The DOMS clarified that position even further in August, warning civil authorities that requests for assistance for Y2K-related problems might well be refused.

As the Army completed its preparations, it shared information with the other services, joint commanders, and defense agencies. The DOD

assembled information from all of those sources in its Y2K database, the official source for status reports to senior officials and the Office of Management and Budget (OMB). The OMB coordinated Y2K preparation efforts throughout the government. A partial exemption from the standard DOD Y2K reporting process was granted to the intelligence community, which maintained a separate database and independently reported its Y2K progress to Congress and the OMB. Declassified summaries of those intelligence reports were incorporated in the primary DOD database to provide a central picture of all DOD preparations without compromising security.

Plans called for the activation of an Army Y2K Transition Operations Cell in the Pentagon between 28 December 1999 and 4 January 2000, and again around the Leap Year rollover period of 26 February to 2 March 2000. Similar cells in the major commands reported their status and any incidents to the Pentagon cell, allowing the Army to address issues as they arose. The Army Transition Operations Cell in turn reported to the DOD Y2K Operations Center, thus ensuring coordination at all command levels as transition issues arose.

This elaborate planning and preparation effort, and the centralized assessment and control of information systems it encouraged, offered the Army additional benefits. In compliance with a March 1997 directive from the chief of staff, General Dennis J. Reimer, the Army used Y2K preparation processes to reduce the number of information systems in its inventory. Eliminating unnecessary systems, consolidating functions, and rationalizing the Army's computing capabilities improved operational and fiscal performance. The mechanism developed to coordinate the response to Y2K as a cyber attack also improved the Army's ability to deal with more malevolent threats to information security.

By the end of FY 1999, the Army had nearly completed its preparations for the transition to 2000. The potential problems associated with Y2K provided the Army with an increased sense of its dependence on information systems and their vulnerability to various hazards. In formulating a coherent response strategy and implementation mechanism, the Army also prepared itself to meet future challenges to its increasingly vital information infrastructure.

9

Conclusion

The reforms initiated by Secretary of Defense Les Aspin's Bottom-Up Review continued to guide Army policies in FY 1999. With the United States enjoying sustained economic growth; low unemployment; and unrivaled diplomatic, military, and technological preeminence, the Army capitalized on the opportunity to further its preparations for the challenges of the twenty-first century. Those preparations, clarified and reinforced through the development of a new Army Vision, did not require major adjustments or the initiation of bold new programs during the fiscal year. FY 1999 was a year of transition in which the Army pursued the development of Force XXI from the existing Army of the Cold War era through previously established processes. Soldiers remained on point for the nation as those processes unfolded, responding to challenges as they arose.

And challenges did arise. Two major storms wreaked havoc through the Caribbean within a month of each other, the first ending just as FY 1999 began. Hurricanes Georges and Mitch left twin swaths of destruction reaching from Honduras to the states of Mississippi, Louisiana, and Florida. While they provided humanitarian assistance following those natural disasters, soldiers continued their peacekeeping missions in Bosnia-Herzegovina, Kosovo, and the Persian Gulf. In preparation for the December 1999 surrender of full control of the Panama Canal to the Republic of Panama, the Army withdrew from that nation after almost a century. The approach of the year 2000 also brought with it a threat to the Army's information systems. As the Army faced these and other challenges, it struggled with a limited budget and ongoing recruiting and retention difficulties.

A budget decrease of less than 1 percent from the previous year left \$64 billion in the FY99 Army appropriation. That amount proved sufficient to fund the approved 3.1 percent raise in military pay despite an essentially unchanged \$2.6 billion pay allocation, thanks in part to a seventy-five hundred-person decline in the authorized strength of the active Army. But the remaining active-component personnel, nearly 480,000 strong, and the 564,000 soldiers of the Army National Guard and Army Reserve still lacked adequate resources to fully address the maintenance backlog, aging

equipment, and declining physical plant that persisted as a threat to their operational readiness. The Army continued to promote new efficiencies and improved practices to better meet its needs with the available resources.

The Army Enterprise Strategy promotes information technology, one of the three axes of the Force XXI campaign, as a means of improving both operational readiness and the efficiency of the business practices and command, control, communications, and intelligence functions that support it. Such efficiency measures, and the savings they produce, are becoming increasingly important in the austere post-Cold War budget climate. The Army's FY99 efforts to expand and improve its use of information networks and computer technology in pursuit of the Army Enterprise Strategy included development of the Joint Network Management System. Originally approved by the Department of Defense (DOD) Joint Requirements Board in October 1998, the system's development stalled for the rest of the year pending completion of another assessment of its interoperability and other key performance parameters.

Preventive measures and contingency preparations for Y2K required the efforts of information systems experts and leaders at all command levels during FY 1999. While countering the hazard the new year posed to its information systems, the Army gained both valuable experience in mounting a systematic response to a digital threat and a new appreciation for the possibilities of cyber warfare. By the end of the fiscal year, the Army had nearly completed its efforts to prepare for the troublesome and swiftly approaching date change, a substantial improvement over the approximately 50 percent compliance with Y2K standards reported for critical Army information systems in October 1998. This result was achieved through the close cooperation of all command levels, with central coordination but substantial allowance for local initiative and responsibility.

A similar strategy of centralized policy coordination and decentralized execution emerged in the newly created National Domestic Preparedness Office (NDPO). Originally established as a DOD-led working group supported by the Army, the NDPO's transfer to the Department of Justice ended several months of internal struggle for leadership of the interagency office. In its first full fiscal year of existence, the NDPO began to synchronize and improve the federal government's ability to respond to the domestic use of weapons of mass destruction, using the resources of the Federal Emergency Management Agency, the Environmental Protection Agency, and the Departments of Energy, Health and Human Services, Justice, and Defense.

The strategic and budgetary guidance originally provided by the 1993 Bottom-Up Review ended with FY 1999. All of the major transformation initiatives called for in the *Report on the Bottom-Up Review* were well under way before the year began. Army leaders could therefore focus their attentions on program execution rather than the development of new

concepts as the year progressed. In an effort to ensure that the current Force XXI process and the eventual transition to the Army After Next (AAN) would continue in the absence of further guidance from the Bottom-Up Review, Army leaders spent part of the year articulating a new Army Vision statement. That statement, scheduled for publication in early FY 2000, identified the Army's core values and goals in the ongoing pursuit of Force XXI and AAN reforms.

Advanced warfighting experiments conducted throughout the year validated the tools and concepts for a fully digitized division to be equipped during FY 2000 as a step toward the eventual digitization of the entire Army and the fielding of Force XXI. On 1 September 1999, the Army received the first M1A2 system enhancement program Abrams tanks. Those vehicles integrated the electronic capabilities of the new digital force with a proven weapons platform. Their enhanced command-and-control capabilities, combined with those of the Bradley fighting vehicles that began carrying the same equipment in FY 1997, will significantly improve the coordination and lethality of digitized units.

The Army pursued other advanced systems in support of Force XXI and AAN goals while continuing to improve the short-term capabilities of the existing force. During FY 1999, two of the most prominent new systems passed significant milestones in their development. The second prototype of the RAH-66 Comanche armed reconnaissance helicopter began flight tests, as engineers started evaluating a redesigned tail section on the first prototype. The first vehicle of the new Crusader artillery system, a test version of the armored transport intended to resupply a separate self-propelled howitzer, entered trials in July. Comanche and Crusader ultimately will provide reconnaissance and fire support for Force XXI. Research, development, testing, and evaluation efforts on these and other projects consumed \$5 billion of the Army's budget in FY 1999.

Procuring and retaining sufficient high-quality personnel is at least as important to the Army's mission capability as is obtaining quality equipment. The booming civilian economy and high demand for skilled labor tempted both potential recruits and career soldiers away from the Army in FY 1999. Meeting the need for highly skilled and, in the civilian sector, highly paid physicians and lawyers proved to be a particular challenge. Lawyers of the Judge Advocate General Corps continued to leave the Army in response to the combination of their high levels of debt from student loans and substantially better civilian salaries. The Army also lost more than 34 percent of the U.S. Army Reserve (USAR) physicians deployed in Operations JOINT ENDEAVOR and JOINT GUARD because of the impact of lengthy mobilizations on their civilian practices.

The Chaplain Corps faced a similar continuing shortage, particularly in the number of Roman Catholic priests volunteering to meet the needs of

the Army's growing number of Catholic personnel. During FY 1999, the general shortage of priests throughout the United States remained a topic of public interest. In August 1999, the Army responded to the question of faith-group underrepresentation in the Army chaplaincy by establishing the Directorate of Ministry Initiatives (DMI), scheduled to begin service in November 1999. The DMI was created to address the demand for more chaplains through aggressive recruiting and retention efforts, initially focusing on the shortage of Army priests.

Despite problems in meeting the Army's needs for such specific and highly sought professionals and for more general new accessions, overall FY99 end strength very closely corresponded with authorized levels. The active Army attained 99.9 percent of its authorized 480,000-person strength. Army Reserve recruiters and retention efforts provided 99.4 percent of the authorized force of 208,003, and the Army National Guard exceeded its 357,223 target to report 100.1 percent of authorized strength by the end of the fiscal year. Authorized levels still remained below validated requirements for full-time support personnel in the Guard and Reserve, however—a persistent problem for reserve-component depot maintenance and general force readiness. The lack of sufficient personnel in Army depots is a primary reason for the persistent maintenance backlogs at those facilities.

Army personnel continued to reflect the diversity of the general population in FY 1999. Within the active Army, 20 percent of new personnel were female, surpassing the annual recruiting goal by 2 percent, while women composed 14.7 percent of the active Army as a whole. African-Americans of both genders made up 26.5 percent of the active Army in FY 1999, Hispanics 7.6 percent, and Caucasians 59.2 percent. The reserve components reflected similar diversity. For comparison, the civilian population of 17–19-year-olds in 1999 was 14.2 percent African-American, 14.9 percent Hispanic, and 66 percent Caucasian.

If the Army had reached its authorized FY99 personnel strength through the planned level of recruitment, rather than through the increased retention efforts it used to overcome continued recruiting shortfalls, it would have faced a serious dilemma. In February the Training and Doctrine Command reported that its authorized funds were insufficient to provide training for the expected number of first-term recruits. Available resources would have produced a shortage of sixty-nine hundred active Army and ninety-three hundred reserve component training spaces for new enlisted personnel and five hundred spaces for newly commissioned officers. New accessions fell short of the FY99 target by 16,500, inadvertently avoiding the embarrassment of recruiting substantially more new personnel than the Army could train.

On a typical day in FY 1999, approximately 140,000 soldiers served in seventy foreign nations, thirty-one thousand of them on operational

deployments. The Army contributed 60 percent of all U.S. forces engaged overseas during the year. Operation JOINT GUARD (Bosnia), Task Force ABLE SENTRY (Macedonia), and Operation SOUTHERN WATCH (Southern Iraqi no-fly zone) all represented significant efforts that required amendments to the president's proposed FY99 budget. Meeting those demands placed a heavy burden on the ten active and eight reserve divisions. Of the 1,462 active Army and reserve component units reporting deployment tempos in FY 1999, 8 percent exceeded the goal of 120 days or less away from their permanent stations, with 4 percent deployed for more than 180 days.

The burdens of that high operating tempo fell particularly hard on personnel in certain high-demand categories, such as psychological operations specialists, counterintelligence agents, interrogators, infantry fighting vehicle crewmen, and cavalry scouts. Support by the reserve component reduced the overall deployment tempo, but the growing reliance on Army Reserve and National Guard formations for overseas operations remained a discouragement to reenlistment or initial entry into the reserve components. Training, maintenance, and force readiness suffered from the ongoing rapid pace of operations.

National Guard personnel continued to execute their civil support and disaster relief missions during FY 1999. Hurricanes Georges and Mitch brought widespread damage to the Caribbean basin before striking along the U.S. Gulf Coast. In addition to mobilization by the various state governors to provide immediate domestic support, Army National Guard (ARNG) personnel provided the bulk of the manpower for Operation NEW HORIZONS. That mission provided disaster relief and reconstruction support throughout the affected region, particularly in Honduras. Under the direction of U.S. Southern Command, the operation launched a new task force every thirty to sixty days, beginning in January 1999. By the time of the operation's 4 August conclusion, 20,800 ARNG and USAR personnel had participated in NEW HORIZONS, accompanied by elements of the active Army and the other services.

Upon its selection by the U.S. Army Reserve Command, Fort Dix became the site of another large-scale humanitarian relief effort by the reserve component. In response to the refugee crisis overwhelming the Republic of Macedonia during the spring of 1999, Operation PROVIDE REFUGE established a sanctuary for 4,025 of the 13,989 refugees from ongoing unrest in Kosovo who temporarily relocated to the United States. Fort Dix, an Army Reserve installation, underwent a substantial expansion of facilities and personnel before it could respond to the needs of the refugees. For example, the existing company-size dining facility at Fort Dix grew to well over twenty times its original size. Thanks to the efforts of mobilized reservists, Fort Dix soon boasted four battalion-size and three company-size dining facilities to accommodate the Kosovars.

Feeding more than four thousand additional people at a post equipped for emergency expansion was not a great challenge for the personnel responsible for meeting the Army's daily supply requirements. Administrative control of logistic matters was transferred from the assistant secretary of the Army for installations, logistics, and environment to the assistant secretary for research, development, and acquisition (subsequently renamed the assistant secretary for acquisition, logistics, and technology). Consolidating acquisition and logistics policy management within the secretariat helped improve the efficiency of both Army functions. With his authorization of the reorganization, Secretary of the Army Louis Caldera emphasized the continuing need for improved business efficiency and streamlined, modernized organizations consistent with the findings of the DOD's 1997 *Defense Reform Initiative Report*.

Total asset visibility—the ability of logistics personnel to track the status and location of items in process, transit, storage, or use on a real-time basis—offers tremendous potential benefits to logistical efficiency and force sustainment. During FY 1999, Operations DESERT THUNDER and DESERT FOX, together with the FOAL EAGLE joint exercise, successfully employed the automated identification and tracking technologies of the Total Asset Visibility program. Much of that technology is commercially available off-the-shelf and that reduced the costs and risks associated with an overhaul of logistics management.

Capitalizing on such technologies, logisticians experimented with a new procedure to support rapid deployments. During FY 1999, the Deployment Stock Package, an automated process improving the supply readiness of deploying units, successfully completed testing during unit rotations at the National Training Center. Its adoption by units in several posts within the continental United States and by others serving in Kuwait supported the development of Total Asset Visibility during FY 1999 even as it improved the responsiveness and sustainability of those units.

Cooperative agreements and sound relationships with allies and potential coalition partners play a key role in Army strategy. Many of the deployments and exercises the Army undertook during the year were intended to maintain those relationships and support coalition commitments. The deputy under secretary of the Army for international affairs (DUSA-IA) updated regulations pertaining to logistical support and other administrative aspects of the Army's security assistance policies during the year. In particular, the Office of the DUSA-IA clarified definitions of weapons systems approved for export and made efforts to rationalize the Army's system for formulating foreign transfer policy during the year. Those accomplishments assisted both ongoing programs and the DUSA-IA's participation in the Arms Transfer Policy Review Group established by the deputy secretary of defense in FY 1999 expressly to construct unified policies.

Allegations that one of the Army's premier venues for delivering security assistance training promoted human rights violations persisted throughout the year. The School of the Americas has trained officers of the United States' Latin American allies since 1946. Some of its graduates have been involved in alleged human rights violations, leading to public outcry and an efforts by members of the House of Representatives to close the school by prohibiting it from using security assistance funds under the proposed FY00 Foreign Appropriations Act. Only a conference resolution, requiring the secretary of defense to certify that the curriculum of the school, particularly in regard to human rights, meets the high standards used in training U.S. personnel, prevented the school's closure at the end of FY 1999.

If the School of the Americas proved able to withstand close scrutiny, the same cannot be said of the careers of two officers. The court-martial of retired Maj. Gen. David R. E. Hale, and his subsequent reduction in rank to brigadier general, drew considerable public attention to the Army's sexual harassment policies. Following his guilty plea and sentencing in March, the Army changed its retirement policies to prevent officers under investigation from leaving active service without careful review. Under that policy the September retirement request of Maj. Gen. John J. Maher III, facing nonjudicial punishment, was not automatically honored. The general was fined and reprimanded later that month, and the outcome of a grade determination review board convened by order of Secretary Caldera will establish his retirement status in early FY 2000.

The Office of the Judge Advocate General (JAG) handled the proceedings against the two officers as part of a caseload that returned to a relatively normal balance after the increase in nonjudicial punishment proceedings and decrease in courts-martial recorded for 1997. During the 1998 calendar year, family law passed estate law as the primary legal service Army personnel sought from the JAG Corps. The number of requests for notary services, powers of attorney, will preparations, and referrals to civilian attorneys climbed significantly during the JAG reporting year that ended during FY 1999, despite the slight decline in total Army strength. That growing workload did not help the JAG's recruiting and retention problems.

Quality of life remains one of the greatest inducements to Army service and most powerful guarantees of strong morale. Thus the Army took significant steps to implement the new family housing privatizing program by turning over the housing at Fort Carson, Colorado, to a private-sector firm contracted to renovate 1,823 family housing units and construct 840 new homes. Development continued on pilot projects to place 13,711 family housing units on three posts under private management, improving the quality and cost efficiency of that important

resource through the authority provided in the 1996 Military Housing Privatization Act. The needs of single soldiers were addressed through the Whole Barracks Renewal Program, which authorized the construction or modernization of 11,700 spaces to the one-plus-one standard during the fiscal year. Meeting that standard, which requires a private sleeping and living area for every soldier, was the Army's highest priority in facilities development for FY 1999.

Educational opportunities are a prominent benefit of Army service. During FY 1999, the Army joined the other services to establish a uniform tuition assistance policy throughout the DOD. That policy enables active-duty military personnel to be reimbursed for 75 percent of tuition costs, up to an annual maximum of \$187.50 per semester hour or \$3,500 per year, to attend accredited educational programs. Under the new plan, a soldier may receive tuition assistance to repeat a failed course if he or she first reimburses the government for any assistance received in support of the failed course.

The quality of life offered by Army service also benefits from the Army's continuing efforts to guarantee equal opportunity and equitable treatment for all. In support of that goal, in October 1998 the Army began distributing a handbook titled *Human Dignity: The Prevention of Sexual Harassment*. High-profile disciplinary proceedings in FY 1998 and FY 1999 arising from allegations of sexual harassment brought renewed attention to the issue and might have contributed to an increase in the number of equal employment opportunity complaints. During FY 1999, the Office of the Judge Advocate General pursued 250 more informal complaints of unlawful discrimination from Army civilians than it did in the previous fiscal year. The office directed a new Army-wide program for the mediation of such disputes, quadrupling the number of complaints addressed by alternative procedures in FY 1998. That effort might have contributed to the Army's receiving one hundred fewer formal discrimination complaints from its civilian workforce in FY 1999.

Avoiding undue disruption to the lives of servicemembers and families affected by the U.S. withdrawal from Panama provided another challenge for Army leaders. U.S. Army South faced the twin problems of establishing a new headquarters at Fort Buchanan, Puerto Rico, and expediting the relocation of Army personnel and families from Panama to either that location or posts in the continental United States. The personnel challenge was met through the expedient of transitional housing. The transfer of personal household goods from Panama to continental posts required approximately sixty days. U.S. Army South designated four hundred housing units for the use of Army families in their final sixty days in Panama, providing the required transit window. All Army dependents were ordered out of Panama by August 1999. At the end of the fiscal year,

only a few hundred Army personnel and contractors remained there to await the final transfer of the Panama Canal and remaining United States property in the former Canal Zone on 31 December.

In FY 1999, even without major changes in policy or the launch of substantial new programs, there was no shortage of challenges for the men and women of the U.S. Army. They successfully weathered storm and scandal at home while they provided the majority of the American military presence abroad. Despite resource constraints, they maintained force readiness and protected the peace in Bosnia, Kosovo, and other far-away areas of the world. The reform process launched by the *Report on the Bottom-Up Review* continued through the last year of that document's formal guidance, moving the Army toward Force XXI and its successor, AAN. As Army information specialists planned and adapted for the potential threat posed by New Year's Day 2000, the Army as a whole continued to prepare for the approaching twenty-first century.

Acronyms

AAA	Army Audit Agency
AAFES	Army and Air Force Exchange Service
AAN	Army After Next
ABCS	Army Battle Command System
ACAP	Army Career and Alumni Program
ACSAP	Army Center for Substance Abuse Programs
AFAP	Army Family Action Plan
AFN	American Forces Network
AFQT	Armed Forces Qualification Test
AFV	alternative-fueled vehicle
AGR	Active Guard and Reserve
AIT	automatic identification technology
AIW	Army Information Warehouse
AMC	Army Materiel Command
AMEDD	Army Medical Department
ARNG	Army National Guard
ASACS	Adolescent Substance Abuse Counseling Service
ASA-IL&E	Assistant Secretary of the Army for Installations, Logistics, and Environment
ASA-RDA	Assistant Secretary of the Army for Research, Development, and Acquisition
ATACMS	Army Tactical Missile System
ATAV	Army Total Asset Visibility [initiative]
ATPRG	Arms Transfer Policy Review Group
AUTODIN	automatic digital network
BASOPS	base operations
BAT	Brilliant Antiarmor [submunitions]
BCTP	Battle Command Training Program
BRAC	base realignment and closure
BUR	Bottom-Up Review
C4I	command, control, communications, computers, and intelligence
CAC	Combined Arms Center [Fort Leavenworth, Ks.]

CAL	Center for Army Leadership
CFO Act	Chief Financial Officers Act [1990]
CMEP	civil–military emergency planning
CMH	Center of Military History [Washington, D.C.]
CMTC	Combat Maneuver Training Center [Hohenfels, Germany]
COMPIO	Consequence Management Program Integration
Office	
CPOC	Civilian Personnel Operations Center
CSA	Chief of Staff, Army
CTC	combat training center
DAFS	Development, Acquisition, and Fielding Strategy
DEPTempo	deployment tempo
DFAS	Defense Finance and Accounting Service
DLAMP	Defense Leadership and Management Program
DLEA	drug law enforcement agency
DMI	Directorate of Ministry Initiatives
DOD	Department of Defense
DOMS	Director of Military Support
DOPMA	Defense Officer Personnel Management Act [1980]
DTS	Defense Travel System
DWCF	Defense Working Capital Fund
ECI	Employment Cost Index
EDAs	excess defense articles
EDI	electronic data interchange
EDM	electronic document management
EEEPO	European Excess Equipment Project Operation
EFT	electronic funds transfer
EL/RAMP	Environmental Legislative and Regulatory Analysis and Monitoring Program
FEMA	Federal Emergency Management Agency
FFMIA	Federal Financial Management Improvement Act of 1996
FLIR	forward-looking infrared
FM	Field Manual
FY	fiscal year
GOSORTS	Global Status of Resources and Training Systems

HBCU/MIs	historically black colleges and universities and minority institutions
HSI	Hispanic-Serving Institution
HUBZone	Historically Underutilized Business Zone
IBCT	Interim Brigade Combat Team
IG	inspector general
IGAR	Inspector General Action Request
IMA	Individual Mobilization Augmentee
INSCOM	U.S. Army Intelligence and Security Command
IPP	International Policy, Plans, Programs, and Integration Division
IRR	Individual Ready Reserve
IRT	Innovative Readiness Training [program]
ISM	Integrated Sustainment Maintenance [program]
ISR	intelligence, surveillance, and reconnaissance
ISYSCON	Integrated System Control
ITR	independent technical review [program]
JLENS	Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System
JRTC	Joint Readiness Training Center [Fort Polk, La.]
JSC	Joint Service Committee on Military Justice
LMSR	large, medium-speed, roll-on/roll-off ship
MC4	Medical Communications for Combat Casualty Care [program]
MEDCOM	Army Medical Command
MLRS	multiple launch rocket system
MPP	Mentor–Protégé Program
MWR	Morale, Welfare, and Recreation [program]
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological, and chemical
NDPO	National Domestic Preparedness Office
NGREA	National Guard and Reserve Equipment Appropriation
NTC	National Training Center [Fort Irwin, Calif.]
ODISC4	Office of the Army Director of Information Systems for Command, Control, Communications, and Computers

ODUSA-IA	Office of the Deputy Under Secretary of the Army (International Affairs)
OTJAG	Office of the Judge Advocate General
OPMD	Officer Personnel Management Directorate
OPTEC	Operational Test and Evaluation Command
OSCAR	Objective Supply Capability Adaptive Redesign [software]
PAC-3	Patriot Advanced Capability-3 [missile]
POM	Program Objective Memorandum
PSYOP	psychological operations [unit]
RMC	regional medical command
RML	Revolution in Military Logistics
RORO	roll-on/roll-off
SADBU	Small and Disadvantaged Business Utilization [program]
SCN	Southern Command Network
SEDM	Southeastern Europe Defense Ministerial
SEP	system enhancement program
SMDC	Space and Missile Defense Command
SSF	Single Stock Fund
THAAD	Theater High-Altitude Area Defense [program]
TOW	tube-launched, optically tracked, wire-guided [missile]
TRADOC	Training and Doctrine Center/Command
USAEC	U.S. Army Environmental Center
USAR	U.S. Army Reserve
USARC	U.S. Army Reserve Command
USARSA	U.S. Army School of the Americas
USARSO	U.S. Army South
USASOC	U.S. Army Special Operations Command
VM	Velocity Management [program/process]
WCF	Working Capital Fund
WMD-CST	Weapons of Mass Destruction-Civil Support Team

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